

SIXTEENTH 1989  
Sixteenth International Conference  
on the Physics of Electronic  
and Atomic Collisions

XVI ICPEAC

①

Third Notice  
Conference Program

30th Anniversary

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Grand Hyatt Hotel • New York, New York • 26 July - 1 August 1989



30th Anniversary

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Sharon Mancuso  
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**IMPORTANT INFORMATION****REGISTRATION:**

|                                                        |       |
|--------------------------------------------------------|-------|
| Participant . . . . .                                  | \$300 |
| Student (with dinner) . . . . .                        | \$150 |
| Technical Student (without dinner) . . . . .           | \$100 |
| Accompanying person with dinner (over 18) . . . . .    | \$125 |
| Accompanying person without dinner (over 18) . . . . . | \$ 75 |
| Child with dinner (12-18) . . . . .                    | \$ 30 |
| Child under 12 or child with no dinner . . . . .       | free  |

**SEND REGISTRATION FORM AND REGISTRATION FEE TO:**

Ms. Sharon Mancuso  
 Conference Coordinator  
 A902 Admin., National Institute of Standards & Technology  
 Gaithersburg, MD 20899 USA  
 Tel: (301) 975-4513  
 Fax: (301) 926-1630

**HOTEL RESERVATIONS**

Send RESERVATION FORMS for hotels on page 15 directly to the address listed, before the date indicated on the appropriate form.

**DISTRIBUTION STATEMENT A**

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# ACKNOWLEDGEMENTS

The Sixteenth International Conference on the Physics of Electronic and Atomic Collisions gratefully acknowledges the assistance it has received from a number of foundations, agencies, corporations, and individuals. Specifically the Conference:

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- Has received substantial financial agency assistance from  
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# INTERNATIONAL ICPEAC ORGANIZATION 1987-1989

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# CONFERENCE DESCRIPTION

## BACKGROUND

### SCOPE

This international conference is one in a continuing biennial series of conferences which seeks to promote the growth of scientific knowledge and its effective exchange among investigators of all nations in the field of the physics of electronic and atomic collisions and in such related areas of atomic and molecular physics which the governing bodies of the conference shall select from time to time. The conference deals with interactions between ions, atoms, molecules, electrons, positrons and photons. Featured talks and symposia this year will include discussion of chaos in atoms, the atomic and molecular physics of supernova SN1987A, trapped particles, computational methods, molecular beam studies of chemical reactions, positron collisions and correlated transfer and excitation processes.

### ORGANIZATION

The XVI ICPEAC is organized by the Local Committee and is governed by the International Conference on the Physics of Electronic and Atomic Collisions. The conference is sponsored by the International Union of Pure and Applied Physics. The conference is co-sponsored by the National Institute of Standards and Technology (NIST) and the American Physical Society (APS) and is supported in part by the Air Force Office of Scientific Research (AFOSR), the Office of Naval Research (ONR), the U.S. Department of Energy (DOE), the National Science Foundation (NSF), and the Defense Advanced Research Projects Agency (DARPA).

### CONFERENCE DATES AND LOCATION

The XVI International Conference on the Physics of Electronic and Atomic Collisions (XVI ICPEAC) will be held 26 July through 1 August 1989 at the Grand Hyatt Hotel, New York City, New York, USA.

## REGISTRATION

### CONFERENCE FEES

The registration fee for regular participants is \$300. This fee entitles the registrant to receive the Book of Abstracts and the Book of Invited Papers and to attend all conference sessions; the Welcoming Reception at the Grand Hyatt between 5:30 and 6:30 p.m. on Tuesday evening, 25 July; the Thursday evening reception at the New York Public Library; the Sunday chamber music concert at NYU; and the Monday evening dinner and boat trip.

The registration fee for accompanying persons is \$125 and for children 12 to 18 years is \$30. No fee is required for younger children. These fees entitle the accompanying person to attend the conference dinner, receptions, and entertainment.

## ADVANCED REGISTRATION

Please complete the enclosed registration form found on page 17 and return it with your remittance to

Ms. Sharon Mancuso  
Conference Coordinator  
National Institute of Standards and  
Technology  
A902 Admin  
Gaithersburg, MD 20899 USA  
Tel. (301) 975-4513

Forms received without remittance will not constitute paid registration. The form should be typed or printed. All fees must be paid in U.S. dollars. Receipt of your registration and remittance will be acknowledged promptly.

A remittance for the registration and the accompanying person's fees can be made for the total amount due in the following ways:

- (a) by a check payable in U.S. dollars to XVI ICPEAC and enclosed with the registration form. Foreign colleagues must remit payment in the form of a treasurer's or certified check issued by a U.S. bank payable in U.S. dollars to XVI ICPEAC. Most major foreign banks have correspondent U.S. banks and can offer such checks for our foreign colleagues.
- (b) by Visa or Mastercard cards with the remittance in dollars. The card number, the expiration date of the card and the registrant's signature and address must be stated on the registration form.

In all cases, the names of the registrants for whom payment is being made must accompany the payment.

**Registration will be greatly facilitated if payment and form are sent in before July 7th.** After that time, we recommend on-site registration. On site registration and the distribution of conference materials to advance registrants will take place on Tuesday between 4:00 p.m. and 10:30 p.m. and on Wednesday starting at 8:00 a.m. at the Grand Hyatt.

# SCIENTIFIC PROGRAM SYNOPSIS

## LANGUAGE

The official language of the conference is English.

## PRESENTATION OF PAPERS

The conference program will consist of Plenary Lectures, Review Talks, Progress Reports, Symposia, and Contributed Papers (Poster Sessions). Some talks, including a few contributed papers, will be presented as 'Hot Topic' talks.

Overhead transparency projectors and slide projectors for standard 2 inch by 2 inch (35 mm) slides will be available for all oral sessions.

## KEYNOTE SPEAKER

Sheldon Datz, Oak Ridge National Laboratory, TN, USA, "On the Utility and Ubiquity of Atomic Collision Physics"

## PLENARY LECTURES (4)

Plenary lectures, lasting one hour including discussion, are intended to be of interest to all participants. The Program Committee has chosen the following plenary lecturers:

- K. Welge, Univ. of Bielefeld, FRG - "Chaos in Atoms"
- Y.T. Lee, University of California, Berkeley, USA - "Molecular Beam Studies of Chemical Reactions"
- K. Takayanagi, Institute of Space and Astronautical Science, Japan - "Low Energy Molecular Collisions with Applications to Interstellar Cloud Problems"
- R.A. McCray, University of Colorado/JILA, USA - "Atomic and Molecular Processes of Supernova 1987A"

## REVIEW LECTURES (18)

Review lectures, lasting 45 minutes including discussion, are expected to provide a review of advances in specific areas of atomic collision physics. The review talks will be included in parallel session programming and are denoted by an "R".

## PROGRESS REPORTS (33)

Progress Reports, lasting 30 minutes including discussion, are intended to describe recent work in a particular sub-field, especially that carried out by the group represented by the speaker. They will be included in parallel session programming and are denoted by a "P".

## HOT TOPIC TALKS (11)

Hot Topic Talks, lasting 20 minutes including discussion, are intended to describe very recent work that is particularly noteworthy and often not yet published. The hot topics talks are included in parallel session programming and are denoted by an "H".

## SYMPOSIA

Four special symposia, each consisting of a number of talks with a common theme, are being organized. The titles of the symposia and the chairman are as follows:

### 1. Correlated transfer/excitation and autoionization

Chairman: J. Tanis, Western Michigan University, MI, USA

### 2. Collisions with cold particles

Chairman: H. Metcalf, State Univ. of New York, Stony Brook, NY, USA

### 3. Collisions involving positrons

Chairman: J. Humbertston, Univ. College London, U.K.

### 4. Supercomputational collisional physics

Chairman: S.M. Younger, Livermore National Laboratory, CA, USA

## CONTRIBUTED PAPERS

All contributed papers, apart from a few selected for oral presentation, will be presented in Poster Sessions. These provide the main forum for the presentation of new work and for discussion of recent progress. Each contributed paper will be allocated a poster board of approximately 4 ft. x 8 ft. (122 x 244 cm). Posters will be on exhibit throughout the entire assigned day and can be visited at any time. However, the authors will be expected to be present at their posters during the Poster Sessions held during periods when no oral presentations are scheduled.

Posters should be in place by 10:00 on the day of presentation and must be removed by 18:00 of that day. Pins or tacks will be provided.

The title of each presentation and the names and affiliations of the authors should be displayed at the top of the poster in large lettering (at least 30 mm in height).

## TRAVEL TO NEW YORK

Travelers to New York City are served by three major airports: LaGuardia, Kennedy and Newark; two major train stations: Pennsylvania Station and Grand Central Terminal; the Port Authority bus terminal; a public transit system of subways and buses; and a fleet of independent taxis and limousines.

Visitors arriving at the airports can get taxicab or bus service to New York City (NYC). Carey Transportation, Inc. bus service serves all terminals of LaGuardia and Kennedy Airports and is the recommended means of transportation. Buses from LaGuardia to the Grand Central terminal directly across from the Grand Hyatt Hotel leave every 20 minutes from 6 a.m. to 12 midnight. The fare is \$6.00, and the trip takes 30-45 minutes. Buses from Kennedy to Grand Central leave every 30 minutes from 6 a.m. to 1:30 p.m. and every 20 minutes from 1:30 p.m. to 12 midnight. The fare is \$8.00, and the trip takes approximately 45 minutes. Visitors arriving at Newark Airport can take the Olympia Trails bus service to Grand Central Terminal. The bus departs from Newark Airport every 15 minutes from 6:00 a.m. to 11 p.m., costs \$7 and takes 30-45 minutes. Tickets are purchased from the bus driver when boarding the bus. Additional bus and limousine information is available at the airport Information Desks. Visitors taking cabs should ask the driver how much the ride will be when entering the cab. The amount should be between \$20 and \$35, depending upon the airport (a tip of 15% is customary). Share-a-cab service is available at reduced rates; see taxi dispatcher for details.

Phone numbers to call for more information (after arrival):

- Carey Transportation, Inc. bus service: (212) 286-9766 (LaGuardia & Kennedy Airports)
- Olympia Trails Bus Co.: (212) 964-6233 (Newark Airport)
- Pennsylvania Station (Amtrack): (212) 582-6875
- Grand Central Terminal (Metro North): (212) 532-4900
- Public buses and subway information (NYC Transit): (718) 330-1234
- Port Authority Bus Terminal (8th Ave. & 41st St.): (212) 564-8484

## OFFICIAL AIRLINES

Pan American World Airways and United Airlines have been designated the official air carriers for the ICPEAC conference.

Pan Am is providing a toll free number (1-800-348-8000) for use within the United States by participants for information on the special discount group fares for travel within the U.S. to this conference. The toll free number is staffed by a team of trained conference specialists from 9:00 a.m. to 9:00 p.m. (Eastern time) daily. When calling, identify yourself as a conference attendee and refer to the special conference code CVN29050.

Although international fares cannot be specially discounted for this conference, Pan Am will provide certain amenities to make international traveling more convenient. Attendees residing outside the U.S. should contact their local Pan Am reservation offices for information on international fares. Attendees should identify themselves as conference participants and refer to the special conference code: CVN29050.

United Airlines is also offering special discounted group rates for conference attendees traveling within the U.S. Information about these special fares can be obtained and reservations can be made by calling the United toll free number, 1-800-521-4041 and speaking with a United conference specialist. To make reservations, you should identify yourself as a conference attendee and provide the conference specialist with the meeting ID number 408LZ. This reservation service desk is open 8:00 a.m. to 11:00 p.m. (Eastern time) every day.

It is recommended that attendees reserve seats early to ensure availability of preferred travel dates and seats at competitive fares.

In addition to providing the special low fares, Pan Am and United have agreed to provide some support for invited speaker travel based on participation in the program. For the conference to be credited, it is imperative that foreign travelers present the back carbon of their ticket at the registration desk so that a copy can be made.

## HOTELS AND RATES

The **Grand Hyatt**, the official conference hotel and the location of all technical sessions, is located adjacent to Grand Central Terminal in midtown Manhattan on 42nd Street between Park and Lexington Avenues. An excellent hotel, the Grand Hyatt is within walking distance of many New York attractions including Broadway theatres, the diamond district, Fifth Avenue, Rockefeller Center, and the United Nations. A block of rooms has been reserved for conference attendees at extremely favorable rates for a first-class New York hotel. The special room rates are:

- Single - \$135 plus tax
- Double - \$145 plus tax
- Triple - \$160 plus tax

To reserve accommodations at the Grand Hyatt, return the form on page 15 with your deposit to the hotel no later than 1 July 1989. After that date, availability of rooms at the special rates cannot be guaranteed. The Hyatt Family Plan provides no charge for children under 18 sharing accommodations with their parents.

For attendees who wish to stay in the **Roosevelt Hotel**, a limited number of rooms have been reserved there. The hotel is located 3½ blocks from the Grand Hyatt (about a 7 minute walk). Attendees who choose the Roosevelt are encouraged to reserve early. The special room rates are:

- Single - \$85 plus tax
- Double - \$95 plus tax
- Extra person - \$25 plus tax

To reserve accommodations at the Roosevelt, return the card on page 15 with your deposit to the hotel no later than 20 June. After that date, the availability of rooms cannot be guaranteed at the special rate.

## ROOMMATE SERVICE

Single attendees who wish to find a roommate for either hotel or the NYU Dormitory, should first contact either **Leonard Rosenberg** (North America, South America, and Asia) or **Annie Pesnelle** (Europe, Africa, and Australia) indicating their hotel or residence of choice before June 25th, 1989. Paired roommates will be notified promptly and should then fill out and mail the appropriate reservation forms directly to their residence of choice listing their roommate's name clearly with a request for two-bed double occupancy.

## CONTACT PERSONS

Prof. Leonard Rosenberg  
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# GENERAL INFORMATION

## COMMERCIAL EXHIBITION

An exhibition of books, journals and scientific equipment will be held during the first two days of the conference.

## WEATHER AND DRESS

New York weather in July can be quite warm, with temperatures rising to above 90°F (33°C) during the days, falling to 70°F (20°C) in the evenings. Plan to bring cool, comfortable clothing, with a sports jacket, a sweater, or light wrap for evenings and for air conditioned buildings. We recommend casual dress and comfortable shoes for sightseeing.

## VISAS

Visa requests should be submitted by conference attendees to the United States Embassy or Consulate nearest their residence as early as possible to avoid delays.

## FOREIGN EXCHANGE

Arrangements have been made for ICPEAC members with Deak International at 41 East 42nd Street (between Vanderbilt and Madison) for currency conversion; their hours of business are: Monday-Friday 9:00-17:00, Saturday 10:00-15:00.

In addition, another convenient facility for foreign exchange is the Chemical Bank at 277 Park Avenue; the hours of business are 9:00-15:00, Monday through Friday.

## ACCOMPANYING PERSON'S PROGRAM

On Wednesday morning at 9:00 a.m. a special "Introduction to New York" lecture, outlining the various opportunities for the upcoming week, will be presented. In addition, several lectures and events, which should be of particular interest to accompanying persons, will be announced. A room will be available for accompanying persons which will serve as a general meeting place and as the starting point for tours.

## ACCOMPANYING CHILDREN

Plans are being made to provide a playroom/lounge for accompanying children. This room will be set up and utilized based on interest expressed in advance. If you will be accompanied by young children or teens or you would like to help in the playroom, please fill out the form included on page 13.

## MEETING PLACE

A room will be set aside as a central meeting point for all participants. It will remain open from the end of the daily scientific sessions to midnight and also at announced times during the weekend.

## SOCIAL PROGRAM

Participation in the following program is open to all conference participants and registered accompanying persons.

## CONFERENCE WELCOME

A reception at no additional cost to the registrants or their guests at the Grand Hyatt Hotel will be held adjacent to the registration area on Tuesday, 25 July from 5:30 to 6:30 p.m. Drinks and light refreshments will be served.

## RECEPTION

The Conference Reception will be held in the Astor Hall at the New York Public Library at 42nd and 5th Avenue on Thursday, 27 July from 7:00 to 8:30 p.m. Drinks and hors d'oeuvres will be served.

## VISIT TO THE UNITED NATIONS

A special visit to the United Nations Headquarters has been arranged for Friday morning at 10:50. A tour of the U.N. buildings will be available. Details will be provided at the time of the conference.

## WEEKEND ACTIVITIES

Several leisure activities are being organized for the weekend. There will be a minimal charge for these events and participants and guests are urged to sign-up at registration.

1) Take me out the the Ball Game. The New York Yankees will be in town on Saturday and Sunday. We have reserved a block of 30 tickets for the Saturday game. Tickets may be purchased, on a first come-first serve basis at registration.

2) Lazy Hazy Sunny Days of Summer. We are planning a Beach Day on Saturday. We have reserved a bus (50 people) for this excursion so sign up early.

3) Other activities being planned include:

- A morning jog in Central Park followed by a runner's picnic lunch.
- Guided Tours to Botanical Gardens and Statue of Liberty.
- A personalized Tour of Soho, its galleries and studios, by a local artist.

Watch for notices - about these and other weekend activities at the registration area of the hotel.

## CONCERT

A chamber music concert by the Manchester String Quartet of Washington, D.C. will be given on Sunday, 30 July, starting at 4:00 p.m. The location is Tishman Auditorium, which is in the NYU Law School building (Vanderbilt Hall, 40 Washington Square South). Tickets are free, but limited in number, and

## GENERAL INFORMATION

will be available at the Conference Registration Desk upon request on a first come, first served basis.

### CONFERENCE DINNER

The conference dinner on Monday evening, 31 July, will be held on a boat which will depart at 19:30 from Circle Line Plaza, West End of 42nd Street for a three-hour cruise of the New York harbor. Buses, which will provide round-trip transportation between the Grand Hyatt Hotel and the Circle Line Pier, will depart at frequent intervals from the Park Avenue entrance to the hotel starting at 18:15. **The last bus will depart at 19:10.**

The cruise will include music, and dancing, as well as the spectacular views of New York City. After cruising down the Hudson River past the 110 story Twin Towers of the World Trade Center, we will pass by the Statue of Liberty which just celebrated its 100th birthday with a monumental renovation. The statue is the emblem of this 30th Anniversary of ICPEAC and stands as a universal symbol of freedom. The boat will also travel the East River passing by the United Nations and under many of New York City's great bridges. It will then travel south to the edge of the harbor, under the majestic Verazano-Narrows bridge with its twin towers, each as high as a 70-story building, supporting one of the world's longest suspension spans. The tour will conclude with a spectacular night view of the lower Manhattan skyline.

## GENERAL ACTIVITIES

### NEW YORK - WHAT TO DO

New York City offers a wide variety of cultural events and historical sights. The **New York Convention & Visitor's Bureau** at 2 Columbus Circle, NYC 10019, (212) 397-8200 and the **New York Visitors Bureau Times Square Information Center** at 42nd St. and Broadway have up-to-date brochures and information about current activities. One can also consult the Sunday issue of the *New York Times* "Arts and Leisure" Section or the NYNEX Yellow Pages 2-29 for good ideas. Information on sightseeing and special events will be available at the registration desk throughout the meeting.

"Free" activities include museums with pay-what-you-wish policies, i.e. the **Metropolitan** (including the Cloisters at Fort Tyron Park on the Upper West Side), as well as the **Brooklyn Children's**, **Bronx Museum**, **Museum of Broadcasting**, **Pierpont Morgan**, and the **Museum of the City of NY**, to name just a few. (See "Free" lists in the Yellow Pages and in the "20 Free Things to Do In New York City" flyer)

Points of interest in Lower Manhattan include the galleries, restaurants, shops and theatres, as well as

the architecture of Greenwich Village (Bleecker St.), Washington Square (NY University), Chinatown, SoHo (South of Houston), and Chelsea districts. Also of interest are New York's **World Trade Center**; the **Museum of Holography** (11 Mercer St., 925-0526); the **South Street Seaport** at Fulton and South Streets (669-9424); **Battery Park** at the tip of Manhattan, the **US Custom House**; the **Federal Reserve Bank of NY** (720-6130); **NY Stock Exchange** at 20 Broad St. (across the Street from the Federal Hall National Monument at 26 Wall St., where George Washington was inaugurated); **St. Paul's Chapel** (pre-revolutionary war structure) at Broadway and Fulton and the **Woolworth Building**. Most of these sights are within walking distance of one another.

Uptown and midtown attractions include **Grand Central Terminal**; **Carnegie Hall** (903-9600) at 57th St. and 7th Ave.; the **United Nations** (1st Ave. between 45th and 46th Streets); **Rockefeller Center** (West of 5th Ave. from 47th - 52nd Streets); the **Chrysler**, **Chanin** (both on 42nd Street East of Grand Central Terminal), and **Empire State** (5th Ave. and 34th St.) art-deco skyscrapers; **Times Square**; **Lincoln Center** at 65th and Broadway (877-2011); **Columbia University** and **Barnard College** at 116th-120th and Broadway; the **Museum of the American Indian** (Broadway at 155th St., 283-2497); the **IBM Gallery of Science and Art** (590 Madison Ave., 745-3500); the **Whitney Museum of American Art** (945 Madison Ave., 570-3676); the **Solomon R. Guggenheim Museum** (1071 5th Ave., 360-3513); **MOMA**, the **Museum of Modern Art** (11 West 53rd St.); the **Frick Collection** (1 East 70th St.); the **Metropolitan Museum of Art** (5th Ave. at 81st St.); and the **American Museum of Natural History** (Central Park West at 79th St.).

## TOURS AND THEATRE TICKETS

Convention Tours Unlimited will coordinate and provide tours and theatre tickets for all registrants and their guests.

A minimum of 35 people is required for each tour. Convention Tours Unlimited has the right to cancel a tour if the minimum number of people has not been met. A refund will be sent to each registrant. All prices for tours include round-trip transportation, admissions, guide service, lunch where included, tax and gratuities. All tours leave from the hotel on the Park Avenue entrance.

Cancellations will be accepted up until two weeks prior to the date of the tour. There are **no** refunds for theatre or Mostly Mozart tickets.

No tickets will be mailed. Please pick up your tickets at the Convention Tours Unlimited tour desk near the registration desk when you arrive at the conference. Your cancelled check will be your receipt.

Payment for the different tours and theatre tickets must be made by check or money order in U.S. currency. All payments must be mailed and sent directly with the appropriate registration form to: Convention Tours Unlimited, 903 Park Avenue, Suite 2A, New York, NY 10021. Telephone (201) 545-1160.

The tours and theatre tickets each have a separate registration form with different cut-off dates. Please note carefully so that you reserve in time to receive the tickets and tours which you desire.

### **An Evening at the Theatre and at Mostly Mozart**

If you responded previously for theatre or Mostly Mozart tickets, please disregard this section, unless you wish to purchase additional tickets. The prices mentioned in the second mailing will be honored for the earlier block of tickets. Because of demand for theatre tickets in New York, we have had to purchase this second block of tickets at slightly higher prices.

We have made arrangements to have an evening of Broadway with a choice of three exciting musical plays in conjunction with Convention Tours Unlimited, Inc. We have ordered a block of orchestra tickets for this evening for the following hit shows:

**Les Miserables** - A sensation and one of the hottest tickets on Broadway. This musical based on the novel by Victor Hugo combines the eternal themes of love, honor, the French Revolution and redemption. Direct from London, this incredible theatrical show has magnificent scenery and fabulous staging.

**Cats** This delightful musical is based on T.S. Eliot's *Old Possum's Book of Practical Cats* and presented with a cast of 23 talented American "cats."

The music is by Andrew Lloyd Webber, the director is Trevor Dunne. There are splendid scenery and costumes, high-flying dancers and incredible dazzlement.

**Anything Goes** - Leslie Uggams, Howard McGillin and Bill McCutcheon star in a brilliant revival of Cole Porter's musical with book by Timothy Crouse and choreographed by Michael Smuin. The music is fabulous and so is the entire production.

**An Evening of Mostly Mozart** - Thursday, July 27, 1989, 20:00. The annual "Mostly Mozart Festival" at Lincoln Center has become an important cultural attraction of the summer months for New Yorkers. The program includes music by Mozart, Haydn, Beethoven and others. This is a must for classical music fans.

**Theatre and Mozart Form on Page 13.**

## TOURS AND THEATRE TICKETS

Choose from a fascinating assortment of tours to guarantee that your visit to New York will be a memorable one. The list of tours has been refined from the earlier, larger listing in the second mailing. If you are interested in these tours, please respond *as soon as possible*, in order to avoid cancellation of the tour.

### **Tour #1: The Best Of New York: A General Sightseeing Tour**

A tour of the architectural and cultural landmarks that make New York unique in the world. You'll see Rockefeller Center, Lincoln Center, Central Park, Harlem, Columbia University, Fifth Avenue, Museum Mile, the United Nations, SoHo, Greenwich Village, Wall Street and much more. You'll also stop at Battery Park for an inspiring view of New York's first lady of freedom, the Statue of Liberty.

Date: Wednesday, July 26, 1989

Time: 1:00 p.m. - 5:00 p.m.

Cost: \$28.00 per person. Pick up at the Park Avenue entrance of hotel.

### **Tour #2: Discount Shopping on the Lower East Side**

Unbeatable bargains await you on the city's lower East Side where savvy international shoppers find fashions from famous European and American designers at a fraction of their usual cost. This guided excursion saves you time and money by leading you directly to the stores with the lowest prices.

Date: Thursday, July 27, 1989

Time: 9:30 a.m. - 12:30 p.m.

Cost: \$25 per person. Pick up at the Park Avenue entrance of hotel.

### **Tour #3: New York's Best Loved Neighborhoods: Chinatown and Little Italy Including Lunch**

Explore the wonderful and surprising sights of Chinatown and Little Italy, sections of the city that have retained their charming character. With your guide, you'll visit a Buddhist Temple and other cultural landmarks of this fascinating area. For the shopper, Chinatown offers wonderful buys on gifts from the Far East. This tour includes a wonderful luncheon at a well-known and authentic Chinese restaurant in the neighborhood. After lunch, follow your guide to Little Italy, with its lavish display of fresh produce, pastry shops and espresso bars.

Date: Friday, July 28, 1989

Time: 10:30 a.m. - 2:30 p.m.

Cost: \$45 per person including lunch.

### **Tour #4 - A Day in Hyde Park: A Visit Along the Hudson River Valley**

Join us for a full day in the country to visit the home and last resting place of the great President, Franklin D. Roosevelt. You will also visit the museum and library where his many memoirs are housed. This glorious area along the Hudson is noted for its beauty. Down the road, we will have lunch at the oldest inn in America and will visit this quaint town where one can shop and browse for antiques.

Date: Saturday, July 29, 1989

Time: 9:00 a.m. - 5:00 p.m.

Cost: \$65 per person including lunch.

**Tour Registration Form on Page 13.**

# **SATELLITE AND RELATED MEETINGS**

## **DYNAMICS OF MOLECULAR COLLISIONS**

16-21 July 1989  
Asilomar (Pacific Grove), CA

Contact: William H. Miller  
Department of Chemistry  
University of California  
Berkeley, CA 94720 USA  
Tel. (415)486-5229

## **WORKSHOP ON ANNIHILATION IN GASES AND GALAXIES**

19-21 July 1989  
Goddard Space Flight Center  
Greenbelt, MD

Contact: Richard J. Drachman  
Code 681  
Goddard Space Flight Center  
Greenbelt, MD 20771 USA  
Tel. (301)286-4426

## **ASPECTS OF ELECTRON-MOLECULE SCATTERING AND PHOTOIONIZATION**

22-25 July 1989  
Yale University  
New Haven, CT

Contact: Arvid Herzenberg  
Applied Physics  
Yale University  
P.O. Box 2157  
New Haven, CT 06520 USA  
Tel. (203)436-1766

## **INTERNATIONAL SYMPOSIUM ON CORRELATION AND POLARIZATION IN ELECTRONIC AND ATOMIC COLLISIONS**

2-4 August 1989  
Stevens Institute of Technology  
Hoboken, NJ

Contact: Kurt H. Becker  
Department of Physics  
City College of New York  
New York, NY 10031 USA  
Tel. (212)690-8310

## **INTERNATIONAL SWARM SEMINAR**

3-5 August 1989  
Polytechnical University  
Farmingdale, NY

Contact: Richard J. Van Brunt  
Building 220  
National Institute of Standards and Technology  
Gaithersburg, MD 20897 USA  
Tel. (301)975-2425

## **INTERNATIONAL SEMINAR ON ION-ATOM COLLISIONS (ISIAC) XI**

3-4 August 1989  
Kansas State University  
Manhattan, KS

Contact: C.L. Cocke  
Department of Physics  
Kansas State University  
Manhattan, KS 66506 USA  
Tel. (913)532-6779

## **LATIN AMERICAN SCHOOL OF PHYSICS: ATOMIC AND MOLECULAR PHYSICS AND THIRD LATIN AMERICAN SEMINAR ON ATOMIC AND MOLECULAR COLLISIONS**

7-26 August 1989  
Instituto de Fisica  
Cuernavaca, Mexico

Contact: Carmen Cisneros  
Instituto de Fisica  
Apartado Postal 139-B  
Cuernavaca, Morelos, MEXICO 62190  
Tel. (73)173077

## Accompanying Children Survey

If you will be accompanied by children, please take a minute to fill out this form, or send your information via electronic mail to JMORGAN@WESLEYAN.BITNET (Bitnet) or JMORGAN@EAGLE.WESLEYAN.EDU (Internet)

If we have sufficient response from registered accompanying persons, we may be able to make arrangements for a playroom lounge, babysitting exchange, or a special activity for young children or teens.

1. Your name: \_\_\_\_\_

2. Accompanying Children:

| Name  | Age   |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

3. Please check any of the following of interest:

- ☐ Playroom at the conference center  
☐ Help finding a babysitter  
☐ Special activity or outing for children (accompanied by parent)  
☐ Other \_\_\_\_\_

4. Would you be interested in sharing a few hours of your time (for example, one morning) with children in a playroom? \_\_\_\_\_

5. Would you be interested in babysitting for a morning, afternoon or evening in exchange for someone babysitting for your children? \_\_\_\_\_

6. Do you have children old enough to babysit who might be interested in babysitting or helping in the playroom? \_\_\_\_\_

ON ARRIVAL, please check the conference message center under "ACCOMPANYING CHILDREN INFORMATION" for the results of this survey.

Mail to: Ms. J. Morgan, Computer Center, Wesleyan Univ., Middletown, CT. 06457

**This form must be returned no later than July 14, 1989**

### Tour Registration Form

|                                                                                    | No. of tickets | Amount |
|------------------------------------------------------------------------------------|----------------|--------|
| Tour #1 - The Best of New York - Sightseeing<br>Wednesday, July 26, 1989 - \$28.00 | _____          | _____  |
| Tour #2 - Discount Shopping<br>Thursday, July 27, 1989 - \$25.00                   | _____          | _____  |
| Tour #3 - Chinatown and Little Italy; Lunch<br>Friday, July 28, 1989 - \$45.00     | _____          | _____  |
| Tour #4 - A Full Day in Hyde Park; Lunch<br>Saturday, July 29, 1989 - \$65.00      | _____          | _____  |
| <b>Total Amount</b>                                                                |                | _____  |

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Telephone \_\_\_\_\_

Mail check and form to:  
 Convention Tours Unlimited  
 903 Park Avenue, Suite 2A  
 New York, NY 10021

**This form must be returned no later than June 21, 1989**

### Theatre and Mostly Mozart Reservation Form

#### Friday Evening, July 28, 1989: An Evening on Broadway

|                |                    | No. of Tickets | Total Amount |
|----------------|--------------------|----------------|--------------|
| Les Miserables | \$56.00 per ticket | x _____        | _____        |
| Cats           | \$56.00 per ticket | x _____        | _____        |
| Anything Goes  | \$54.00 per ticket | x _____        | _____        |

#### Thursday Evening, July 27, 1989: Mostly Mozart, 20:00

|                              |                    |         |                |
|------------------------------|--------------------|---------|----------------|
| Mostly Mozart                | \$20.00 per ticket | x _____ | _____          |
| <b>Total Amount Enclosed</b> |                    |         | <b>\$_____</b> |

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Telephone \_\_\_\_\_

Mail check and form to:  
 Convention Tours Unlimited  
 903 Park Avenue, Suite 2A  
 New York, NY 10021

**Grand Hyatt New York • Park Ave. at Grand Central • New York, NY 10017** XVI ICPEAC • 26 July - 1 Aug. 1989  
(212) 883-1234

To reserve hotel accommodations at the Grand Hyatt, fill out the form below and return it to the hotel no later than **July 1, 1989**. After that date, the availability of rooms cannot be guaranteed, nor the special rates. All reservation requests must be accompanied by a deposit equal to one night's rate (including tax). Please enclose a check, made payable to the hotel, or indicate credit card information in the spaces below.

Name \_\_\_\_\_ Please reserve: \_\_\_\_\_ Single(s) \_\_\_\_\_ Double(s) \_\_\_\_\_ Triple(s)  
Name of Person(s) Sharing Room \_\_\_\_\_  
Organization \_\_\_\_\_ Rates: \$135.00 Single / \$145.00 Double / \$160 Triple  
Children under 18 stay free in parents' room  
Address \_\_\_\_\_ Rates subject to 13.25% tax and \$2 per night occupancy tax.  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Country \_\_\_\_\_ Arrival Date \_\_\_\_\_ Departure Date \_\_\_\_\_  
Check in time 3 p.m. Check out time 12 noon  
Telephone \_\_\_\_\_ Credit Card Number \_\_\_\_\_  
Expiration Date \_\_\_\_\_  
Signature of Cardholder \_\_\_\_\_  
Reservations will be held only until 6:00 p.m. unless accompanied by a deposit or an accepted credit card and signature.  
Method of guarantee (check one) ☐ Deposit enclosed  
☐ Credit card  
Check one: ☐ American Express ☐ VISA  
☐ MasterCard ☐ Diners Card ☐ Carte Blanch

**The Roosevelt • Madison Avenue at 45th Street • New York, NY 10017** XVI ICPEAC • 26 July - 1 Aug. 1989  
(212) 661-9600

To reserve hotel accommodations at the Roosevelt, fill out the form below and return it to the hotel no later than **June 20, 1989**. After that date, the availability of rooms cannot be guaranteed, nor the special rates. All reservation requests must be accompanied by a deposit equal to one night's rate (including tax). Please enclose a check, made payable to the hotel, or indicate credit card information in the spaces below.

Name \_\_\_\_\_ Please reserve: \_\_\_\_\_ Single Room(s) \_\_\_\_\_ Double Room(s)  
Name of Person(s) Sharing Room \_\_\_\_\_  
Organization \_\_\_\_\_ Rates: \$85.00 Single / \$95.00 Double or Twin / \$25 each additional occupancy  
Rates subject to 13.25% tax and \$2 per night occupancy tax.  
Address \_\_\_\_\_ Arrival Date \_\_\_\_\_ Departure Date \_\_\_\_\_  
Check in time 3 p.m. Check out time 12 noon  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Country \_\_\_\_\_ Credit Card Number \_\_\_\_\_  
Telephone \_\_\_\_\_ Expiration Date \_\_\_\_\_  
Signature of Cardholder \_\_\_\_\_  
Reservations will be held only until 6:00 p.m. unless accompanied by a deposit or an accepted credit card and signature.  
Method of guarantee (check one) ☐ Deposit enclosed  
☐ Credit card  
Check one: ☐ American Express ☐ VISA  
☐ MasterCard ☐ Diners Card ☐ Carte Blanch

Reservations must be cancelled by 4 p.m. to receive refund of deposit.

## Have You Made Your Hotel Reservations Yet?

As a **reminder** in order to receive the conference **special hotel rates** you must have your reservations in by:

**June 20, 1989** The Roosevelt

**July 1, 1989** Grand Hyatt New York



30th Anniversary

**The XVI International Conference  
on the Physics of Electronic and Atomic Collisions**  
26 July - 1 August 1989  
Grand Hyatt Hotel, New York, NY  
**Conference Registration Form**

**Fee Policy**Please type or print  
Name

Affiliation

Street Address

City

State

Zip

Country

The conference registration fee is \$300. Students will have a reduced fee of \$150. There is an accompanying person(s) fee of \$125 for those person(s) over the age of 18 years. For children between the ages of 12-18 years the fee is \$30. Children under the age of 12 are not required to pay a fee. These fees entitle the registrant and accompanying person(s) to attend all conference sessions and social events which includes the conference dinner on Monday evening, 31 July. For students who do not wish to attend the dinner the fee is \$100. For accompanying persons who do not wish to attend the dinner the fee is \$75.

**Enter Amount in Appropriate Category**

Advance Registration ..... @ \$300 \$

Student Registration ..... @ \$150 (Students pay no penalty for late registration) \$

Technical Students Registration ..... @ \$100 (Excluding Dinner) \$

Accompanying Person(s) Over 18 Years ..... @ \$125 (Including Dinner) \$

Name(s)

Accompanying Person(s) Over 18 Years ..... @ \$75 (Excluding Dinner) \$

Name(s)

Accompanying Children 12-18 Years ..... @ \$30 (Including Dinner) \$

Name(s)

Children Under 12 Years ..... Free

Name(s)

Total Enclosed \$

Special Food Requirements at Conference Banquet: ☐ Vegetarian ☐ Kosher ☐ OtherMethod of Payment: ☐ Check (Please make check payable to XVI ICPEAC, U.S. Funds Only)☐ Master Card ☐ Visa Card No. Exp. Date

Authorized Signature

Verification of Student Status: Complete this section if student status is requested and/or application is to be made to the ICPEAC Chairman for a student grant.

I verify that

will be a bona fide pre-doctoral student at the time of the conference at supervised by

(Department and University)

Signature

Title

Date

Please mail form with payment to:

XVI ICPEAC  
Sharon L. Mancuso  
National Institute of Standards and Technology  
A902 Admin  
Gaithersburg, MD 20899

**Cancellation**

Deadline for cancellation of a registration with a refund is 15 June, 1989. \$50.00 of the fee will not be refunded to cover administrative costs. All requests for refunds must be received in writing to Sharon Mancuso, NIST, A903 Admin, Gaithersburg, MD 20899.

# PROGRAM SCHEDULE

## TUESDAY, 25 JULY

16.00 - 22.30

Grand Hyatt  
Registration

17.30 - 18.30

Grand Hyatt  
Reception

## WEDNESDAY, 26 JULY

08.00

Ballroom Level Grand Hyatt  
Registration

### Ballrooms C and D Welcome and Opening Ceremony

Presider: E. MERZBACHER (University of North Carolina, USA)  
Chairman, XVI ICPEAC

09.00

M. S. LUBELL (City College, CUNY, USA)  
Co Chairman, XVI ICPEAC Local Organizing Committee  
"Welcome"

SPEAKER TO BE ANNOUNCED  
"Opening of Conference"

### Ballrooms C and D Keynote Lecture

Chairman: V. V. AFROSIMOV (Ioffe Institute, USSR)

09.30

S. DATZ (Oak Ridge National Laboratory, USA)  
"On the Utility and Ubiquity of Atomic Collision Physics"

10.30

Coffee Break

### Ballroom C Electrons

Chairman: A. N. TRIPATHI  
(University of Roorkee, India)

11.00 H. SUZUKI (Sophia University, Japan) **P**  
"Giant Resonances in Double Ionization of Atomic Ions"

11.30 N. G. ADAMS  
(University of Birmingham, UK) **H**  
"Determination of End Products of Dissociative Recombination Reactions"

11.50 I. A. MORGAN (Royal Holloway and New Bedford College, UK) **P**  
"R Matrix Calculations of Electron-Molecule Scattering"

### Ballroom D Photons

Chairman: B. M. JOHNSON  
(Brookhaven National Laboratory, USA)

11.00 U. BECKER (Technical University of Berlin) **R**  
"Synchrotron Radiation Experiments on Atoms and Molecules"

11.50 J. LEVIN  
(Oak Ridge National Laboratory, USA) **P**  
"Synchrotron Radiation Experiments With Recoil Ions"

12.20

Lunch

13.30

Ballrooms A, B, and F  
Posters and Exhibits

**H** Hot Topic Talk **P** Progress Report **R** Review Lectures

# PROGRAM SCHEDULE, Continued

WEDNESDAY, 26 JULY, Continued

| Ballroom C<br>Electrons<br>Chairman: N. ANDERSEN<br>(University of Aarhus, Denmark) |                                                                                                                      | Ballroom D<br>Ions and Atoms<br>Chairman: C. CISNEROS<br>(UNAM-Cuernavaca, Mexico) |                                                                                                                                     |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 16:00                                                                               | M. H. KELLEY (NIST, USA)<br>Spin Dependence, Orientation, and<br>Alignment in Electron-Atom Collisions" R            | 16:00                                                                              | A. BÁRÁNY (AFI, Stockholm, Sweden) R<br>"Theoretical Collision Physics of Highly<br>Charged Ions"                                   |
| 16:45                                                                               | J. F. WILLIAMS<br>(University of Western Australia) P<br>"Electron-Photon Coincidence Studies of<br>Atomic Hydrogen" | 16:45                                                                              | R. M. DREIZLER (Universität Frankfurt,<br>FRG) P<br>"Optical Potentials in Ion-Atom Collisions"                                     |
| 17:15                                                                               | W. R. NEWELL<br>(University College-London, UK) P<br>"Simultaneous Electron-Photon Excitation<br>Experiments"        | 17:15                                                                              | R. D. RIVAROLA (Instituto de Física,<br>CONICET-UNR, Argentina) P<br>"Distorted Wave Models for Ionization in<br>Atomic Collisions" |
| 17:45                                                                               | W. NAKEL<br>(Universität Tübingen, FRG) P<br>"Relativistic (e, 2e) Processes on Inner<br>Shells of Heavy Atoms"      | 17:45                                                                              | K. TAULBJERG (University of Aarhus,<br>Denmark) P<br>"Electron Capture and Energy-Gain<br>Spectroscopy"                             |
| 18:15                                                                               | Adjourn                                                                                                              | 18:15                                                                              | Adjourn                                                                                                                             |

THURSDAY, 27 JULY

Ballrooms C and D  
**Plenary Session**  
Chairman: P. M. KOCH  
(SUNY-Stony Brook, USA)

08:45 K. H. WELGE (Universität Bielefeld, Germany, FRG)  
"Chaos in Atoms"

09:45 Coffee Break

| Ballroom C<br>Molecules<br>Chairman: L. VUSKOVIC<br>(New York University, USA) |                                                                                                                                                     | Ballroom D<br>General<br>Chairman: B. FASTRUP<br>(University of Aarhus, Denmark) |                                                                                                                     |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 10:15                                                                          | M. LOMBARDI (Université Joseph Fourier<br>de Grenoble, France) P<br>"Chaos in Molecular Rydberg States"                                             | 10:15                                                                            | A. MÜLLER (Universität Giessen, FRG) R<br>"Resonant Recombination and<br>Autoionization in Electron-Ion Collisions" |
| 10:45                                                                          | J. B. A. MITCHELL (University of Western<br>Ontario, Canada) P<br>"Dissociative Recombination of Molecular<br>Ions: Recent Developments"            | 11:00                                                                            | A. U. HAZI (Lawrence Livermore National<br>Laboratory, USA) R<br>"Atomic Physics of Soft X-Ray Lasers"              |
| 11:15                                                                          | J. P. ZIESEL<br>(Université Paris Sud, France) P<br>"High Resolution Electron Molecule<br>Scattering Using Synchrotron Generated<br>Electron Beams" |                                                                                  |                                                                                                                     |

H: Hall Type Talk P: Progress Reports R: Review Lectures

# PROGRAM SCHEDULE, Continued

THURSDAY, 27 JULY, Continued

11:45

Lunch

12:45

Ballrooms A, B, and E  
Posters and Exhibits

Ballroom C  
**Ions and Atoms**  
Chairman: J. A. TANIS  
(Western Michigan University, USA)

14:45 J. McGUIRE  
(Kansas State University, USA)  
"Correlation in Atomic Scattering"

15:30 **SYMPOSIUM: "Correlated Transfer/  
Excitation and Autoionization"**

W. G. GRAHAM  
(Queens University, Belfast, UK)  
"Transfer and Excitation With Heavy  
Projectiles and Targets" (25 minutes)

Y. HAHN (University of Connecticut, USA)  
"Resonance States in Atomic Collisions: A  
Unified Picture" (25 minutes)

P. HVELPLUND (University of Aarhus,  
Denmark)  
"Recombination Between Free Electrons  
and Multiply Charged Ions" (25 minutes)

R. SCHUCH (Mann Siegbahninstitutet  
for Fysik, Sweden)  
"RTE and Dielectronic Recombination With  
H-Like and Li-Like Ions" (25 minutes)

T. ZOUROS (Kansas State University,  
USA) **H**  
"Observation of Electron-Electron  
Interactions in Collisions of O<sup>2+</sup> and F<sup>2+</sup>  
Ions with H<sub>2</sub> and He Targets" (20 minutes)

18:00 Adjourn

Ballroom D  
**Photons**  
Chairman: H. METCALF  
(SUNY-Stony Brook, USA)

14:45 M. H. MITTLEMAN  
(City College, CUNY, USA)  
"Processes in Intense Radiation Fields"

15:30 **SYMPOSIUM: "Collisions With Cold  
Particles"**

G. DUNN (JILA, USA)  
"Measurements on Very Low-Energy  
Collisions Using Ion Traps" (25 minutes)

P. JULIENNE (NIST, USA)  
"Theory of Ultra-Cold Atomic Collisions in  
Optical Traps" (25 minutes)

F. MASNOU-SEEUWS (Laboratoire des  
Collisions Atomiques et Moleculaires,  
Orsay, France) **H**  
"Theoretical Treatment of the Associative  
Ionization Reaction Between Laser Excited  
Sodium Atoms: Energy Dependence and  
Anisotropy Effects" (20 minutes)

T. WALKER (JILA, USA)  
"Collisional Loss Mechanisms in Light  
Force Atom Traps" (20 minutes)

J. WALRAVEN (University of Amsterdam,  
Netherlands)  
"Atomic Hydrogen: Gas and Surface  
Collisions" (25 minutes)

J. WEINER (University of Maryland, USA)  
"Experimental Advances and Perspectives  
in Cold Collision Dynamics" (25 minutes)

18:00 Adjourn

New York Public Library  
(Fifth Avenue and 42nd Street)

19:00-20:30

McGraw-Hill - AT&T Reception

**H** Heat Pipe Talks, **P** Progress Reports, **R** Review Lectures

# PROGRAM SCHEDULE, Continued

**FRIDAY, 28 JULY**

| Ballroom C<br>Electrons<br>Chairman: A. TEMKIN<br>(NASA-Greenbelt, USA) |                                                                                                                               | Ballroom D<br>General<br>Chairman: N. C. SIL (Indian Association for<br>the Cultivation of Science, Calcutta, India) |                                                                                                                |   |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---|
| 08:45                                                                   | A. KINGSTON (Queens University,<br>Belfast, UK)<br>"The Theory of Electron-Ion Collisions"                                    | R                                                                                                                    | 08:45 G. SCOLES (Princeton University, USA) R<br>"Molecular Collisions In, On, and With<br>Molecular Clusters" |   |
| 09:30                                                                   | D. H. MADISON (University of Missouri-<br>Rolla, USA)<br>"Theoretical Calculations of Electron<br>Impact Excitation of Atoms" | P                                                                                                                    | 09:35 Yu. N. DEMKOV (Leningrad State<br>University, USSR)<br>Title to Be Announced                             | R |
| 10:00                                                                   | N. CLAYTOR (University of Pennsylvania,<br>USA)<br>"Measurement of Electron-Impact Ionization<br>in $U^{2+}$ - $U^{3+}$ "     | H                                                                                                                    |                                                                                                                |   |

10:20

**Recess**

## United Nations General Assembly Building Conference Room A

10:50 DR. M. ANANDAKRISHNAN (Deputy Director, Center of Science and Technology for Development)

11:50

**Lunch**

## Ballrooms C and D **Plenary Session**

Chairman: F. GIANTURCO (University of Rome, Italy)

13:00

Y. T. LEE (University of California-Berkeley, USA)  
"Molecular Beam Studies of Chemical Reactions"

14:00

Ballrooms A, B, and E  
**Posters**

| Ballroom C<br><b>Ions and Atoms</b><br>Chairman: D. BERENYI<br>(Atomki, Debrecen, Hungary) |                                                                                                                                                        | Ballroom D<br><b>General</b><br>Chairman: A. LAGANÁ<br>(University of Perugia, Italy) |                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15:45                                                                                      | E. SALZBORN (Univ. Giessen, FRG)<br>"Ion-Ion Collisions: Charge Transfer and<br>Ionization"                                                            | R                                                                                     | 15:45 W. H. MILLER (University of California-<br>Berkeley, USA) R<br>"Recent Developments in the Theory and<br>Application of Quantum Scattering Theory<br>for Chemical Reactions" |
| 16:30                                                                                      | G. SCHWIETZ (Hahn-Meitner Institut,<br>Berlin)<br>"Multiply Differential Ionization Probabilities<br>in Small Impact Parameter Ion-Atom<br>Collisions" | P                                                                                     | 16:30 A. KLEYN (FOM Institute, Netherlands) P<br>"Harpooning and Chemistry at Surfaces"                                                                                            |

H Hot Topic Talks, P Progress Reports, R Review Lectures

# PROGRAM SCHEDULE, Continued

## FRIDAY, 28 JULY, Continued

|                                                                                                                                                                |                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 17:00 J. C. POIZAT (Université Claude Bernard, France) <b>P</b><br>"Energy Loss and Charge Exchange Processes of High-Energy Heavy Ions Channeled in Crystals" | 17:00 W. P. REINHARDT (University of Pennsylvania, USA) <b>P</b><br>"Wave Packet Dynamics: Theory and Experiment"             |
| 17:30 H. BEIJERINCK (Eindhoven University of Technology, Netherlands) <b>P</b><br>"Dynamics of Inelastic Collisions of Electronically Excited Rare-Gas Atoms"  | 17:30 V. S. LEBEDEV (P. N. Lebedev Physical Institute, USSR) <b>P</b><br>"Collisions of Rydberg Atoms With Neutral Particles" |
| 18:00 Adjourn                                                                                                                                                  | 18:00 Adjourn                                                                                                                 |

## SATURDAY, 29 JULY

### Leisure Activities

## SUNDAY, 30 JULY

### Leisure Activities

|       |                                                                                                                                                                  |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16:00 | <b>Chamber Music Concert: Manchester String Quartet</b><br>Tishman Auditorium<br>New York University Law School<br>Vanderbilt Hall<br>40 Washington Square South |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## MONDAY, 31 JULY

### Ballrooms C and D

#### Plenary Session

Chairman: W. L. LICHTEN (Yale University, USA)

|       |                                                                                                                                                           |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08:45 | K. TAKAYANAGI (Institute of Space and Astronautical Science, Japan)<br>"Low-Energy Molecular Collisions With Applications to Interstellar Cloud Problems" |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|

#### 09:45 Coffee Break

| Ballroom C<br><b>Ions and Atoms</b><br>Chairman: S. BOBASHEV<br>(Ioffe Institute, USSR) |                                                                                                                                                                                | Ballroom D<br><b>General</b><br>Chairman: R. V. JENSEN<br>(Yale University, USA) |                                                                                                                                                                |
|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:15                                                                                   | D. SMITH<br>(University of Birmingham, UK) <b>R</b><br>"SIFT and FALP Determinations of Ionic Reaction Rate Coefficients"                                                      | 10:15                                                                            | J. BURGDOERFER (University of Tennessee and Oak Ridge National Laboratory, USA) <b>R</b><br>"Collisionally Induced Stochastic Dynamics of Fast Ions in Solids" |
| 11:00                                                                                   | L. HÜWEL (Wesleyan University, USA) <b>H</b><br>"Position Sensitive Detection With Laser-Induced Fluorescence"                                                                 | 11:00                                                                            | H. BRYANT (Univ. of New Mexico, USA) <b>H</b><br>"Observation of Excited H <sup>o</sup> Atoms Produced by Relativistic H Ions in Carbon and Formvar Foils"     |
| 11:20                                                                                   | M. TSUJI (Kyushu University, Japan) <b>P</b><br>"Optical Spectroscopic Studies on Penning Ionization and Ion-Molecule Reactions at Thermal Energy by Using Flowing Afterglows" | 11:20                                                                            | D. L. SHEPELYANSKY (Institute of Nuclear Physics, Novosibirsk, USSR) <b>P</b><br>"Chaos and Localization in Strongly Driven Atoms"                             |

**H** Hot Topic Talks, **P** Progress Reports, **R** Review Lectures

# PROGRAM SCHEDULE, Continued

MONDAY, 31 JULY, Continued

11:50 L. SHMAENOK (Ioffe Institute, USSR) **P**  
 "Multi-Charged Ion/Slow-Electron  
 Collisions in Cold Plasmas"

11:50 D. RICHARDS (The Open Univ., UK) **P**  
 "Classical Ghosts in Quantal Microwave  
 Ionization"

12:20

Lunch

13:20

Ballrooms A, B, and E

Posters

Ballroom C

## Electrons and Positrons

Chairman: J. HUMBERSTON (University  
 College, London, UK)

15:00 C. J. JOACHAIN (Free University of  
 Brussels, Belgium) **R**  
 "Electron-Atom Collision Theory"

15:45 **SYMPOSIUM: "Collisions Involving  
 Positrons"**  
 R. DRACHMAN (NASA-Greenbelt, USA)  
 "The Workshop on Annihilation in Gases  
 and Galaxies" (25 minutes)

A. GHOSH (Indian Association for the  
 Cultivation of Science, Calcutta, India) **H**  
 "Theory of Positron-Atom Scattering  
 Including Positronium Formation"  
 (25 minutes)

W. KAUPPILA (Wayne State Univ., USA)  
 "Measurements of Positron and Electron  
 Total and Elastic Scattering by Atoms and  
 Molecules" (15 minutes)

W. RAITH (Universität Bielefeld, FRG)  
 "Positron Impact Ionization of Atoms"  
 (15 minutes)

P. SCHULTZ (University of Western  
 Ontario, Canada)  
 "Slowing Down of Positrons in Solids"  
 (25 minutes)

A. STAUFFER (York University, Canada)  
 "Theoretical Calculations of Positron  
 Collisions With Atoms" (25 minutes)

18:05 Adjourn

Ballroom D

## Photons

Chairman: R. PRATT (University of Pittsburgh,  
 USA)

15:00 S.T. MANSON (Georgia State Univ., USA) **R**  
 "Photoionization of Positive Ions: Present  
 Status and Future Prospects"

15:45 M. Ya. AMUSIA (Ioffe Institute, USSR) **P**  
 "Polarization Radiation in Electronic and  
 Atomic Collisions ('Atomic'  
 Bremsstrahlung)"

16:15 K. SCHARTNER (Univ.-Giessen, FRG) **H**  
 "Correlation Effects in Electron- and  
 Photon-Induced 2e<sup>-</sup> Transitions in Rare  
 Gases"

16:45 D. CUBAYNES (Lab. de Spectroscopie  
 Atomique et Ionique and LURE, France) **P**  
 "Photoionization Studies in Laser Excited  
 Atoms Using Synchrotron Radiation:  
 Present Status and Perspectives"

17:15 D. PEGG (University of Tennessee and  
 Oak Ridge National Laboratory, USA) **P**  
 "Photodetachment Collisions"

17:45 V. SCHMIDT (Univ. Freiburg, FRG) **H**  
 "Double Photoionization Near Threshold"

18:05 Adjourn

19:30 - 22:30

Harbor Cruise  
 Conference Dinner

**H** Hot Topic Talks, **P** Progress Reports, **R** Review Lectures

# PROGRAM SCHEDULE, Continued

**TUESDAY, 1 AUGUST**

Ballrooms C and D

## Plenary Session

Chairman: A. DALGARNO (Harvard-Smithsonian, USA)

08:45

R. A. McCRAY (JILA, USA)

"Atomic and Molecular Processes in Supernova 1987A"

Ballrooms C and D

## Business Meeting and Award Session

E. MERZBACHER (University of North Carolina, USA)

Award to B. BEDERSON (New York University, USA) for his service to atomic physics

09:45

10:25

## Coffee Break

Ballroom C

### General

Chairman: S. YOUNGER (Lawrence Livermore National Laboratory, USA)

10:50 **SYMPOSIUM: "Supercomputational Collision Physics"**

C. BOTTCER (Oak Ridge National Laboratory, USA)  
"Collisions of Complex Systems at Intermediate Energies" (25 minutes)

R. CAR (Trieste, Italy) **H**  
Title to Be Announced (15 minutes)

J. D. GARCIA (University of Arizona, USA)  
"Ion-Metal and Ion-Atom Collisions: Instant Replays and Mean Field Theories" (25 minutes)

M. KLAPISCH (Racah Institute, Hebrew University, Israel)  
"Computations of Populations of Energy Levels in Hot Plasmas: State of the Art and Perspectives" (25 minutes)

K. T. TAYLOR (Royal Holloway and New Bedford Colleges, UK)  
"Large-Scale Calculations of Electron-Atom/Ion Processes" (25 minutes)

Ballroom D

### General

Chairman: M. GAVRILA (FOM Institute, Netherlands)

10:50 P. H. BUCKSBAUM (AT&T Bell Laboratories, USA) **P**  
"Above Threshold Ionization and Related Effects"

11:35 A. L'HUILLIER (CEN, Saclay, France) **P**  
"Generation of Very High Harmonics of Optical Radiation in Rare Gases"

12:05 D. J. LARSON (Univ. of Virginia, USA) **P**  
"Photodetachment in Strong Fields"

12:35 J. McDONOUGH (Yale University, USA) **H**  
"Latest Results on  $e^+ - e^-$  Experiments"

12:55

## Lunch

Ballrooms A, B, and E

## Posters

13:45

**H** Hot Topic Talks, **P** Progress Reports, **R** Review Lectures

# PROGRAM SCHEDULE, Continued

**TUESDAY, 1 AUGUST, Continued**

## Ballroom C Ions and Atoms

Chairman: R. McCARROLL (Université P&M  
Curie, France)

- 15:15 D. H. JAKUBASSA-AMUNDSEN (Universität München, FRG) **P**  
"Spectral Distribution of Electrons Emitted  
Into the Continuum of Fast Projectiles:  
Higher-Order Perturbative Approaches"
- 15:45 A. S. SCHLACHTER (Lawrence Berkeley  
Laboratory, USA) **H**  
"Close Encounters of the Multiple-Capture  
Kind"
- 16:05 J. ULLRICH (Universität Frankfurt, FRG) **H**  
"Study of the Momentum Transfer Between  
Projectile and Recoil Ion in Fast Ionizing p-  
He Collisions"
- 16:25 A. WOLF (Universität Heidelberg, FRG) **H**  
"First Atomic Physics Experiments With  
Cooled Stored Ion Beams at the  
Heidelberg Heavy Ion Ring TSR"
- 16:45 C. BIEDERMANN (University of  
Tennessee and Oak Ridge National  
Laboratory, USA) **H**  
"State-Selected Angular Distributions of  
Single-Electron Capture in Very Slow  $Ar^{1+}$  -  
Ar Collisions"
- 17:05 R. HOEKSTRA (KVI, Netherlands) **H**  
"1 -State Selective Charge Exchange Cross  
Sections for Collisions of  $He^{2+}$  With Atomic  
and Molecular Hydrogen"

## Ballroom D General

Chairman: K. G. LYNN (Brookhaven National  
Laboratory, USA)

- 15:15 F. B. DUNNING (Rice University, USA) **R**  
"Atomic Physics in Surface Studies: An  
Overview"
- 16:00 J. BOKOR (AT&T Bell Labs, USA) **P**  
"Direct Studies of Surface Dynamics Using  
Picosecond Photoemission Spectroscopy"
- 16:30 P. NORDLANDER (Rutgers Univ., USA) **P**  
"Hydrogen-Surface Electron Transition  
Rates"
- 17:00 S. JONES (Brigham Young Univ., USA) **P**  
"Cold Nuclear Fusion in Condensed  
Matter"

## Ballroom C Closing Remarks

- 17:25 R. S. FREUND (AT&T Bell Labs, USA)  
Co Chairman, XVI ICPEAC LOC
- 17:35 Adjourn

## Ballroom D Closing Remarks

- 17:25 T. B. LUCATORTO (NIST, USA)  
Co-Chairman, XVI ICPEAC LOC
- 17:35 Adjourn

## POSTER SESSIONS —TOPICS

### WEDNESDAY, 26 JULY

Ballrooms A, B, and E

13:30 - 16:00

Photoionization of Atoms or Ions, Experimental

Multiphoton Processes in Atoms and Ions, Theoretical

Electron-Atom Collisions:

Spin-Dependence, Alignment and Orientation, Part One

Inelastic Processes, Theoretical

Electron-Molecule Collisions:

Excitation and Ionization, Experimental: Polyatomic Molecules

Ion-Atom Collisions:

Ionization and Transfer Ionization, Theoretical

Electron-Transfer Involving High-Velocity, Multiply-Charged Ions

Electron-Transfer Involving Multiply-Charged Ions,  $Z=1$  Target

Electron-Transfer Involving Multiply-Charged Ions,  $Z=2$  Target

Electron-Transfer Involving Multiply-Charged Ions,  $Z>2$  Target

General

Ion-Molecule or Atom-Molecule Collisions:

General

### THURSDAY, 27 JULY

Ballrooms A, B, and E

12:45 - 14:45

Photoionization of Atoms or Ions, Theoretical

Photoionization of Molecules

Electron-Atom Collisions:

Ionization

Elastic Processes

Ion-Atom Collisions:

Ionization and Transfer Ionization, Experimental

Excitation and Transfer Excitation

Electron-Capture and -Loss Into Continuum and Convoy Electrons

Ion-Molecule or Atom-Molecule Collisions:

Excitation and Dissociation

# POSTER SESSIONS —TOPICS, Continued

**FRIDAY, 28 JULY**

Ballrooms A, B, and E  
14:00 - 15:45

Photodissociation and Detachment

Electron-Atom Collisions:

Elastic Processes

Inelastic Processes, Experimental

Post-Collision Interactions and General

Electron-Molecule Collisions:

Excitation and Ionization, Theoretical

Electron-Ion Collisions:

Excitation

General

Collisions Involving Exotic Species:

Positrons

Ion-Atom Collisions:

Electron-Transfer Involving Singly-Charged Ions

Ion-Molecule or Atom-Molecule Collisions:

Electron-Transfer and Ionization

Collisions Involving Condensed Matter:

Collisions With Surfaces

Collisions Involving Clusters:

General

**MONDAY, 31 JULY**

Ballrooms A, B, and E  
13:20 - 15:00

Multiphoton Processes in Molecules

Electron-Molecule Collisions:

Dissociation and General

Collisions Involving Exotic Species:

General

Ion-Atom Collisions:

Quasimolecular Collisions

Inner-Shell Phenomena

Positron Formation

Atom-Atom Collisions:

Excitation

Ionization

General

Ion-Ion Collisions:

Excitation, Electron-Transfer and Ionization

## POSTER SESSIONS —TOPICS, Continued

### MONDAY, 31 JULY, Continued

Collisions Involving Rydberg Atoms:

Collisions with Ions, Neutral Particles and Clusters

Field-Assisted Collisions:

General

Experimental Techniques:

General

Related Topics:

General

### TUESDAY, 1 AUGUST

Ballrooms A, B, and F

13:45 - 15:15

Multiphoton Processes in Atoms and Ions, Experimental

Photon Impact:

General

Electron-Atom Collisions:

Spin-Dependence, Alignment and Orientation, Part Two

Electron-Molecule Collisions:

Excitation and Ionization, Experimental: Diatomic Molecules

Electron-Ion Collisions:

Ionization

Recombination

Ion-Atom Collisions:

Autoionization and Electron Detachment

Alignment and Orientation

Collisions Involving Condensed Matter:

Collisions With Solid (Bulk) Matter

Post Deadline Contributions:

General

# POSTER SESSION LISTINGS

## LEGEND FOR ABSTRACTS

Title of Poster ..... X YYY Z  
Authors

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YYY Z=Day and location of poster  
X=Page number in Book of Abstracts

# Wednesday - July 26

## Photoionization Of Atoms Or Ions, Experimental

|                                                                                                                                                                                                  |    |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------|
| Kr 3d And Xe 4d Photoionisation Close To Threshold<br>L. Avaldi, R. Hall, G. Dauber, P.M. Rutter and G.C. King                                                                                   | 1  | Wed 1  |
| Resonance Structure In The Argon Photoelectron Spectrum<br>A.A. Wills, A.A. Cafolla, F.J. Currell, J. Comer, W.A. Svensson,<br>M.A. MacDonald                                                    | 2  | Wed 2  |
| Atomic Physics With White-Light Synchrotron Radiation: Synchrotron<br>Radiation Fluorescence Of Argon<br>B.M. Johnson, M. Meron and K.W. Jones                                                   | 3  | Wed 3  |
| Correlation Satellites In The Photoelectron Spectrum Of Neon And Xenon<br>A.A. Wills, A.A. Cafolla, A. Svensson and J. Comer                                                                     | 4  | Wed 4  |
| Auger Decay Of Valence Vacancies In Rare Gases<br>U. Becker, O. Hemmers, B. Langer, A. Menzel and R. Wehlitz                                                                                     | 5  | Wed 5  |
| Observation Of Argon, Krypton And Xenon Photoelectron Satellites Near<br>Threshold<br>R.I. Hall, L. Avaldi, G. Dawber, P.M. Rutter and G.C. King                                                 | 6  | Wed 6  |
| Valence Double Ionization In The Rare Gases: A Direct Or<br>Indirect Process?<br>P. Lablanquie, P. Morin, I. Nenner, K. Ito                                                                      | 7  | Wed 7  |
| Angle- And Spin-Resolved Photoelectron Spectroscopy Of Tl In The Region<br>Above The $Tl^+(6s6p) \ ^3P$ Limit<br>M. Salzmann, N. Bowering, H.-W. Klausing, M. Muller and U. Heinzmann            | 8  | Wed 8  |
| Angle-Resolved VUV Photoelectron Spectroscopy Of Laser Excited<br>Ytterbium Atoms<br>C. Kerling, N. Bowering and U. Heinzmann                                                                    | 9  | Wed 9  |
| Determination Of Transition Amplitudes And Phase-Shift Differences For<br>The Photoionization Of Ytterbium $(4f)^{14}$<br>M. Muller, N. Bowering, U. Henizmann and V. Radojevic                  | 10 | Wed 10 |
| Angle- And Spin Resolved Photoelectron Emission From Physisorbed Xenon<br>Atoms In Comparison With Free Atom Photoionization<br>B. Kessler, N. Muller, B. Schmiedekamp, B. Vogt and U. Henizmann | 11 | Wed 11 |
| A Technique For Measuring Absolute Photoionization Cross Sections Of<br>Excited Atoms Using Fluorescence Reduction<br>K.D. Bonin, M. Gatzke, C.L. Collins and M.A. Kadar-Kallen                  | 12 | Wed 12 |
| Photoionisation Of Ca And Sr Atoms Into Excited Ion States<br>H.-J. Beyer, H. Hamdy, H. Kleinpoppen and J.B. West                                                                                | 13 | Wed 13 |

## Wednesday - July 26

|                                                                                                                                                                                             |    |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------|
| 2s and 2p Photoionization In Excited Sodium: Binding Energies And Cross Sections<br>D. Cubaynes, J.M. Bizau, B. Carré, M. Richter, T. Menzel<br>and F.J. Wuilleumier                        | 14 | Wed 14 |
| Study Of Multicharged Photoions Of The Rare Earths In The Region Of The Giant Resonances<br>Ch. Dzionk, W. Fiedler, M. von Lucke, P. Zimmermann                                             | 15 | Wed 15 |
| Photon Induced VUV-Flourescence Of Rare Gas Atoms<br>K.-H. Schartner, P. Lenz, B. Mobus, B. Magel, H. Schmoranzer<br>and M. Wildberger                                                      | 16 | Wed 16 |
| Multiple-Photoionization Of Rare-earth Atoms; Sm, Eu, and Yb<br>M. Yoshino, T. Hayaishi, Y. Itikawa, Y. Itoh, T. Koizumi, T. Matuo,<br>T. Nagata, Y. Sato, Y. Takizawa and A. Yagishita     | 17 | Wed 17 |
| Multiphoton Atomic Ionization - Spectroscopy And Phenomena Of Lutetium Via Resonance Ionization Mass Spectrometry<br>B.L. Fearey, R.A. Keller and C.M. Miller                               | 18 | Wed 18 |
| The 3p Photoabsorption Spectra of Cr and Cr <sup>+</sup><br>John Costello, Eugene Kennedy, Bernd Sonntag and Charles Clark                                                                  | 19 | Wed 19 |
| Observation Of Landau Resonances At Magnetic Fields Below 0.07 Telsa In A High-Resolution ( $\Delta f=70$ MHZ) Laser Photodetachment Study Of O <sup>-</sup><br>H.F. Krause                 | 20 | Wed 20 |
| Experimental Apparatus For The Study Of Electron Correlation In Atomic System<br>Pascale Roy and Roger J. Bartlett                                                                          | 21 | Wed 21 |
| Investigation Of The Effect Of Target Thickness On The X-Ray Yield Of Al, Ag, And Au<br>Darren Kahler and C.A. Quarles                                                                      | 22 | Wed 22 |
| High Resolution Laser Spectroscopic Study Of The R(ns',nd') Autoionization Resonances Of The Rare Gas Atoms R = Ne,Ar,Kr,Xe<br>D. Klar, K. Harth, J. Ganz, T. Kraft, M.-W. Ruf and H. Hotop | 23 | Wed 23 |
| <b>Multiphoton Processes In Atoms And Ions, Theoretical</b>                                                                                                                                 |    |        |
| Theoretical Studies Of Electron And Photon Emission From Atoms In Intense Laser Fields<br>Kenneth C. Kulander and Bruce W. Shore                                                            | 92 | Wed 24 |
| Above-Threshold Ionization And Electron-Ion Scattering In A Strong Circularly Polarized Laser Field<br>A. Franz, J.S. Briggs, J.T. Broad and H. Klar                                        | 93 | Wed 25 |

# Wednesday - July 26

|                                                                                                                                                                             |     |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------|
| Differential Electron Polarization In Non-Resonant Atomic Multiphoton Ionization<br>A. Rachman                                                                              | 94  | Wed 26 |
| Scattering Theory Of Multiphoton Ionization In Strong Fields<br>Dong-Sheng Guo, Teijo Åberg and Bernd Crasemann                                                             | 95  | Wed 27 |
| Multiphoton Above-Threshold Ionization Of Atomic Hydrogen By Circularly Polarized Light<br>E. Karule                                                                        | 96  | Wed 28 |
| Excitation Of Autoionization States Of The Sr Atom In Photoprocesses<br>Danzan S. and Strakhova S.I.                                                                        | 97  | Wed 29 |
| Two-Photon Ionization Of Ca Atom In Strong Laser Field<br>M.M. Dovhanich, M.I. Haysak, V.I. Lengyel                                                                         | 98  | Wed 30 |
| R-Matrix Theory Of Two-Photon Absorption: Application To Carbon<br>M.T. Smith, K.T. Taylor and C.W. Clark                                                                   | 99  | Wed 31 |
| Retardation Effects In Two-Photon Absorption<br>M. Lieber, X.L. Yang and F.T. Chan                                                                                          | 100 | Wed 32 |
| Dynamics Of Multiphoton Excitation And Quantum Diffusion In Rydberg H Atoms<br>Tsin-fu Jiang, Kwanghsi Wang and Shih-I Chu                                                  | 101 | Wed 33 |
| Fractal Character Of Quasi-Energy States In Intense Polychromatic Fields<br>Kwanghsi Wang and Shih-I Chu                                                                    | 102 | Wed 34 |
| Two-Frequency Multiphoton Ionization In Helium<br>S. Bivona, R. Burlon and C. Leone                                                                                         | 103 | Wed 35 |
| Second-Order Corrections To The Wave Function Of The Hydrogen Atom In A Harmonic Uniform Electric Field<br>Viorica Florescu, A. Halasz and M. Marinescu                     | 104 | Wed 36 |
| Radiative Distortion Of The Hydrogen Atom In Superintense, High-Frequency Fields Of Linear Polarization<br>M. Pont, N.R. Walet and M. Gavrila                               | 105 | Wed 37 |
| The Frequency Dependence Of The Complex Dynamic Hyperpolarizability<br>Liwen Pan, Charles Clark and Ken Taylor                                                              | 106 | Wed 38 |
| A New Variational Principle For Time Dependent Interactions<br>S. J. Ward and J. Macek                                                                                      | 107 | Wed 39 |
| <br>Electron-Atom Collisions:<br>Spin-Dependence, Alignment And Orientation, Part One                                                                                       |     |        |
| Experiment For Spin Polarized Triple Differential Studies Of Electron-Impact Ionization Of Lithium: Status Report<br>G. Baum, P. Freienstein, L. Frost, W. Raith, M. Wagner | 147 | Wed 40 |

# Wednesday - July 26

|                                                                                                                                                                                                                                         |     |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------|
| Left-Right Asymmetries For Polarized Electrons Scattered Super-Elastically From Laser-Excited Unpolarized Sodium Atoms<br>V. Nickich, T. Hegemann and G.F. Hanne                                                                        | 148 | Wed 41 |
| Spin-Polarized Electron Scattering From Optically Pumped Sodium At 20 eV<br>S.J. Buckman, J.J. McClelland, M.H. Kelley and R.J. Celotta                                                                                                 | 149 | Wed 42 |
| Low Energy $M_L$ & $M_S$ Dependences In Electron Excitation Of Na 3S-3P: Differential & Angle Integrated Cross Sections<br>X.L. Han, G.W. Schinn, M. Troyer and A. Gallagher                                                            | 150 | Wed 43 |
| Superelastic Electron Scattering From The $3^2P$ State In Sodium<br>R.E. Scholten, P.J.O. Teubner, G.F. Shen and T. Andersen                                                                                                            | 151 | Wed 44 |
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| Stokes Parameters For the Optical Transitions $8^2S_{1/2} \rightarrow 6^2P_{1/2,3/2}$ And $6^2P_{3/2} \rightarrow 6^2S_{1/2}$ In Cesium After Impact Excitation By Polarized Electrons<br>F. Eschen, G.F. Hanne, K. Jost and J. Kessler | 153 | Wed 46 |
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