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The topics investigated experimentally and theoretically by the Pittsburgh Atomic Sciences Institute with applications to high power laser development and atmospheric IR backgrounds are enumerated. Reports containing the detailed scientific progress in these studies are cited. Finally, a list of the journal articles describing the results of the programs, with full references, is given.		

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FINAL REPORT

ORDER NUMBER: The Advanced Research Projects Agency
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Pittsburgh, PA 15260

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PROJECT SCIENTIST: M. A. Biondi, Director
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June 25, 1980

I. Scope of the Research Programs

During the period of this contract, July 1, 1975 - May 15, 1980, the Pittsburgh Atomic Sciences Institute (PASI) carried out experimental and theoretical studies of atomic collision processes with applications to high-power laser developments and atmospheric IR radiation backgrounds. The detailed scientific progress has been described in a series of semi-annual reports, PASI Technical Progress Summaries Nos. 19-25.

The topics investigated include the following experimental programs.

1. Laser Ion-Molecule Reaction Rates
2. Energy Transfer Processes of Laser Interest
3. Dissociative Recombination and Dissociative Excitation
4. Metal Atom Chemi-excitation
5. Infrared Chemiluminescence
6. Atmospheric Particulate Technology

The topics under theoretical investigation were:

1. Charge Transfer
2. Rotational Excitation of Diatomic Molecules
3. Ion Velocity Distributions in Drift Tubes
4. Excimer Potential Curves
5. V → E Energy Transfer
6. Ion-Ion Recombination

The results of these studies have been fully described in the journal publications listed in the next section.

II. Publications by PASI under the Contract

The results of the researches carried out in the various programs described in Sec. I have been described in articles in a number of journal publications. The following list gives the title, authors and journal reference for the publications under ARPA Contract N00014-76-C-0098:

Accession For	
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Publications

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