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THEORETICAL INVESTIGATION OF ATOMIC STRUCTURE AND SCATTERING PR--ETC(U)
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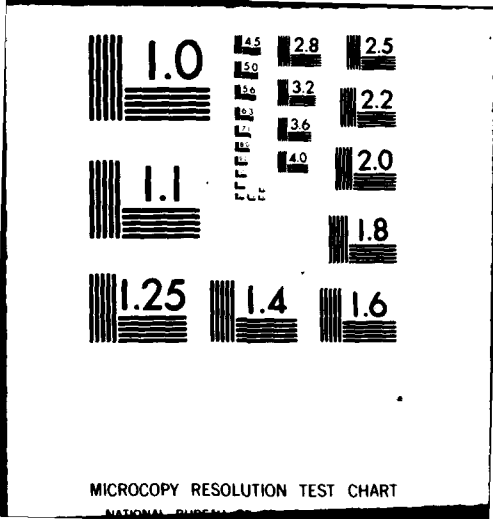
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19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Scattering Theory Atomic Structure Free-free transitions Radiative corrections		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) One area explored is the use of intense laser beams in interaction with atomic systems; the interaction of the projectile and target in a scattering problem with the laser beam is accounted for. We have further explored the applicability of variational methods in general scattering processes.		

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electron volts. The predictions of the theory are in much better agreement with the data than those of the semi-classical theory. In quantum electrodynamics, dealing with effects of vacuum fluctuations on long-range atomic interactions, we have calculated the radiative corrections to the energy levels of an electron bound to a wall. For an ideal wall the effects are some 10,000 times the radiative correction for the Lamb shift in a hydrogen atom; unfortunately, the effects for a real wall are comparable to the radiative correction for the Lamb shift in a hydrogen atom. We have also studied the generalized oscillator strength and have set up a simple approximation method valid for large values of the momentum transfer, and applied it to the helium atom.

6. Publications.

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- R. Shakeshaft, Comment on the inelastic scattering of relativistic charged particles. Submitted to *Phys. Rev. A*.

7. Extenuating Circumstances.

None.

8. We do not expect to have any unspent funds remaining at the end of the contract period.

9. None.

10. National Science Foundation.

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