

Abstract Submitted
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Electron Collisions with Astrophysically Important Ions of Fe
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PENNY SCOTT, The Queens University of Belfast — One of the outstanding problems in electron collisions with atoms and ions is the accurate calculation of cross section data for low ionisation stages of iron peak elements such as iron, nickel and cobalt. There are a number of difficulties which arise from open d-shells in the target states of these ions. Firstly, a large CI expansion is required to adequately represent electron correlation effects within the target ion, and secondly, the open d-shells give rise to a large number of target states. Furthermore, if we consider transitions between fine-structure levels, this can give rise to thousands of coupled channels. In addition, calculations must be carried out over a very fine energy mesh in order to resolve low-lying Rydberg resonances. These difficulties have necessitated a major redevelopment of the standard scalar R-matrix codes to produce the parallel PRMAT and Breit-Pauli suite of codes. These new packages are being applied to the study of electron collisions with a number of Fe ions including Fe II and Fe III. Latest collisional data will be presented at the conference.

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