Ionisation and state-selective charge-transfer cross sections for injected impurities

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Recent progress in applications of the two-centre wave-packet convergent close-coupling (WP-CCC) approach to collisions involving injected impurity ions is reviewed. The approach uses a pseudopotential to model interactions of the multi-electron impurity ions with the target. The method has been applied to calculate the total ionisation and state-resolved electron-transfer and target-excitation cross sections in C^{2+} and C^{3+} collisions with atomic hydrogen. The total electron-capture cross sections, calculated in a broad projectile energy range from 1 keV/u to 1 MeV/u, agree with available experimental data. Charge exchange in collisions of Ar^{16+} ions with hydrogen has also been investigated. For this projectile, capture into states with $n = 14 - 17$, where n is the final-state principal quantum number, are found to be the most important. The results appear to disagree with the CTMC ones. Preliminary results for the N^{Z+} and O^{Z+} ions are also discussed.