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Low-energy electron molecule collision calculations with the R-matrix method

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The R-matrix method is widely used to study electron – and positron – molecule collisions.[1] It is now being systematically applied constituent molecules of technological plasmas where it is particularly useful for studying collision processes with open shell species for which experimental studies are particularly difficult. Sample results for collision calculations will be given at the meeting. Such calculations can now be performed by the non-specialist using the Quantemol-N expert system. The R-matrix with pseudo-states method has been implemented as part of the UK molecular R-matrix codes. This method extends the energy range treatable by the method as well as significantly improving the treatment of polarization effects.

[1]J. Tennyson, 2010, Phys. Rep., 491, 29.