Calculation of He+H$_2$ cross-sections using slow variable discretization enhanced renormalized Numerov propagator method

JUAN BLANDON, GREGORY PARKER, University of Oklahoma — Collisional quenching is an important process in the trapping of diatomic molecules, which has attracted interest due to recent efforts to form molecular Bose-Einstein condensates, for example. We apply the slow variable discretization enhanced renormalized Numerov method to calculate elastic and inelastic cross-sections for the He+H$_2$ system, using the Muchnick-Russek HeH$_2$ potential energy surface [1]. Such calculations are inherently technically difficult, due to the large number of H$_2$ bound states involved, and the large scattering energy range used in the calculations.