

Resonances in $e^+ + \text{He}^+$ System

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A three body system involving electron, positron and He^{2+} is considered. For the negative total energies, two possible arrangements in the asymptotic region are $\text{He}^{2+} + \text{Ps}$ and of $e^+ + \text{He}^+$. There exists attractive long range potentials in the former arrangements, namely, the polarization potential in the ground state Ps channel and the dipole potentials in the excited state Ps channels. Infinite series of resonances occur below the excited states Ps thresholds due to the long range dipole potential. While, the interaction at a large distance is dominated by a repulsive coulomb potential in the latter arrangement, and the channels which dissociate into $e^+ + \text{He}^+$ do not have many resonances.

Resonance calculations have been performed using the stabilization method¹⁾, the complex rotation method²⁾, and the hyperspherical close coupling (HSCC) method,³⁾ however, there are disagreements in the existence of resonances among these calculations.

We reexamine the S-wave resonances using the HSCC method, and show the results in the meeting.

References

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