Title:	Autoionizing States of Dihydrogen Anion
Authors:	Patidar, Rohit Kumar (/jspui/browse?type=author&value=Patidar%2C+Rohit+Kumar)
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Abstract:	The lowest electronic state of H2-(2Σ+u) is unstable because it autoionizes at an internuclear distance of 1.4 a.u. Yet in the experiments by Heber at el. a life time of 8.5 μs has been reported for this state at an internuclear distance of 1.4 a.u. In this thesis, the autoionizing states of H2- have been studied. The life times of vibrational resonances have been calculated. The effect of autodetachment on the scattering cross section is also examined. Different methods were used for the calculation of the life time. Complex scaling method is used for the calculation of the vibrational resonances of a model potential (Cizek's potential). Apart from using a model potential, the complex potential energy curves (CPEC) of the autoionizing state have been calculated using a complex absorbing potential. The imaginary part of this CPEC gives the decay width as a function of internuclear distance.
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