Abstract Submitted
for the SES13 Meeting of
The American Physical Society

Evaluation of Quasi-Molecules for collision studies at low energies
DWAYNE JOSEPH, Department of Physics & Dual Degree Engineering Program, Morehouse College, Atlanta, GA-30314, BIDHAN SAHA, Department of Physics, Florida A&M University, Tallahassee, FL-32307 — Slow collisions involving ions and atoms or molecules has wide application from astro to plasma physics [1] and require special attention for obtaining accurate information regarding its structure and interactions. At low velocities the projectile can reach the close vicinity of the target for forming a quasi-molecule. The accurate determination of its eigenvalues and eigenfuctions poses difficulties when the internuclear separation becomes less than 1 bohr. We report the details of our recent study on (SiH)3+ quasi-molecule using the multi-reference single- and double-excitation configuration interaction (MRD-CI) method [2].

[1] B.H. Bransden amd M.R.C. McDowell. Charge Exchange and the Theory of Ion-Atom Collisions(Clarendon Press, Oxford, 1992).
[2] R. J. Buenker, Current Aspects of Quantum Chemistry 1981, Vol **21**, edited by R. Carbo (Elsevier, Amsterdam) p 17.

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Date submitted: 30 Sep 2013 Electronic form version 1.4