

Abstract Submitted  
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**Radiative charger transfer in ultracold collisions of Yb atoms and Rb ions**<sup>1</sup> BRENDAN MCLAUGHLIN, HUGO LAMB, JIM MCCANN, Queens University Belfast, QUB TEAM — We have investigated radiative decay processes at ultra-cold temperatures and above for Rb ions colliding with Yb atoms. Previously [1], we investigated the structure and low temperature dynamics of Yb atoms colliding with R ions. We use the MOPRO quantum chemistry suite of codes to obtain potential energies and transition dipole moments, as a function of bond length between low lying states of the YbRb<sup>+</sup> molecular ion complex. A full-configuration interaction (FCI) and a multi-reference configuration interaction (MRCI) approximation is use to determine all the potential energy curves and moments, where the molecular orbitals (MO's) used are obtained from state averaged multi-configuration-self-consistent field (MCSCF) calculations. The collision problem is solved quantally using an optical potential method with a semi-classical approximation invoked for higher energies. Rate coefficients are determined for temperatures ranging from micro-Kelvin up to 20, 000 Kelvin. Further details and a comprehensive set of results will be presented at the meeting.

[1] H. D. J. Lamb, J. F. McCann, B. M. McLaughlin, J. Goold, N. Wells and I. Lane, Phys. Rev. A 86, 0227719 (2012).

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