

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Quantum logic scheme for state detection of molecular ions
SHIQIAN DING, HUANQIAN LOH, ROLAND HABLUTZEL, DZMITRY MATSUKEVICH, Centre for Quantum Technologies, National University of Singapore — Quantum state detection of a single molecular ion can be applied towards precision measurement and controlled studies of cold chemistry. Such detection can be performed using quantum logic techniques, where the internal state of the molecular ion is mapped onto the state of a co-trapped atomic ion by coupling both of them to the common motional modes. The rotational state of the molecular ion can therefore be read out using the fluorescence of the atomic ion. Further, we can use the Zeeman splitting as a signature of different rotational levels due to their different magnetic g-factors. We will report implementation of this scheme using two atomic ions as a proof-of-principle experiment.

Huanqian Loh
Natl Univ of Singapore

Date submitted: 31 Jan 2014

Electronic form version 1.4