

Abstract Submitted
for the DAMOP18 Meeting of
The American Physical Society

Towards cooling SrF molecules to the ultracold temperature regime YUQI ZHU, MATTHEW STEINECKER, DAVID DEMILLE, Yale University — Given the recent demonstration of trapping strontium monofluoride (SrF) molecules in a magnetic quadrupole trap, we have started working towards cooling SrF to the ultracold temperature regime ($T \ll 100 \mu\text{K}$). Here we present some plans for sympathetic cooling of SrF molecules with co-trapped rubidium (Rb) atoms, and describe progress towards our initial goal of studying interactions of a spin-polarized Rb-SrF mixture in a magnetic trap. We are also investigating the prospects for Raman sideband cooling (RSC) of SrF in an optical lattice as a way to further cool the molecules without the need for collisions. Preliminary to implementing RSC, the polarizability of ground state SrF has been calculated. We highlight the complexity associated with the anisotropic structure of molecules, and suggest plausible cooling schemes in the presence of this complexity.

Yuqi Zhu
Yale University

Date submitted: 26 Jan 2018

Electronic form version 1.4