Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

Coherent spin-rotation state transfer in TlF OLIVIER GRASDIJK, MICK AITKEN, DAVID DEMILLE, JAKOB KASTELIC, Yale University, DAVID KAWALL, UMass Amherst, STEVE LAMOREAUX, OSKARI TIMGREN, Yale University, KONRAD WENZ, Columbia University, TRISTAN WINICK, UMass Amherst, TREVOR WRIGHT, Yale University, TANYA ZELEVINSKY, Columbia University, CENTREX COLLABORATION — The aim of CeNTREX (Cold molecule Nuclear Time-Reversal Experiment) is to search for the protons electric dipole moment by exploiting the Schiff moment of ^{205}TlF in the polar molecule thallium fluoride (TlF). To maximize the molecular flux, an electrostatic quadrupole lens is employed to collimate a TlF beam. After rotational cooling, the first few rotational ground states of a cold TlF beam have been emptied into a single J=0 hyperfine level in the $^1\Sigma^+$ electronic ground state. In order to populate a weak-field seeking state that the lens can optimally affect, microwaves are required to transfer TlF from J=0 to J=2. Transitioning from this state preparation region into the electrostatic quadrupole field of the lens will induce non-adiabatic transitions to unwanted states due to rapidly changing fields. This poster describes the recent progress in efficient, coherent spin-rotation state transfer in TlF.

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Date submitted: 31 Jan 2020 Electronic form version 1.4