Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Strong-Field Ionization of Laser Cooled Li Atoms. SACHIN SHARMA, KEVIN ROMANS, DANIEL FISCHER, Missouri ST, Rolla, MO — Recently, our understanding of few-body effects has been substantially boosted by the development of intense femto- and attosecond laser sources. Observing the momenta of the fragments of atoms and molecules ionized in these strong fields provided new and before inconceivable insights in molecular and electronic dynamics. Here, we report on a new experiment, where the target atoms (^{6}Li) are laser cooled and trapped using a magneto optical trap (MOT). Momentum vectors of the target fragments will be measured using a reaction microscope (ReMi). The exclusivity of this setup is a combination of MOT and ReMi, thus dubbed as MOTReMi. Here, the advantages over standard COLTRIMS systems are multifold: Firstly, an unprecedented recoil ion momentum resolution can be achieved, as the target can be prepared at significantly lower temperatures. Second, the atoms can be optically prepared in the ground or in polarized excited states. In a first experimental campaign, studies on single ionization of laser excited and polarized Lithium atoms will be performed with circularly polarized light. This experiment can provide insight into the helicity-dependence of the ionization dynamics as the differences among co- and counter rotating electron and laser field, if any, can be investigated.

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Date submitted: 29 Jan 2016 Electronic form version 1.4