

Abstract Submitted
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Generation and Spectroscopy of LiRb Molecules: towards coherent optical control with multi-photon photo-association¹ JOHN LORENZ, ADEEL ALTAF, SOURAV DUTTA, PING WANG, Department of Physics, Purdue University, West Lafayette, IN 47907, DANIEL ELLIOTT, School of Electrical and Computer Engineering and Department of Physics, Purdue University, YONG CHEN, Department of Physics and School of Electrical and Computer Engineering, Purdue University, West Lafayette, IN 47907 — We report on our progress in studying the formation and manipulation of polar LiRb molecules photo-associated in a dual species Rb-85/Li-7 magneto-optical trap (MOT). Spectroscopic techniques will allow determination of the rovibronic structure of these molecules. The internal states of the resulting LiRb molecules will be manipulated using coherent optical interactions. We aim to achieve optically-based local control of the density and the rotational superposition states of these molecules, thereby controlling the dipole-dipole interaction between adjacent LiRb molecules. Ultimately, we are interested in using these techniques to establish grounds for quantum logic gates based on such polar molecules.

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