

Developments in Collinear Laser Spectroscopy at COLLAPS

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Collinear laser spectroscopy (CLS) is a well-established technique for observing nuclear moments of short-lived radioactive nuclei. However, sensitivity and isotope production bound the regions of the nuclear chart that can currently be explored with this method. A solution to this problem is to develop novel methods of spectroscopy with higher sensitivity. The COLLAPS experiment is pursuing techniques which use charge exchange as a quantum state selector to allow detection by particle counting, which can drastically increase the sensitivity of continuous beam laser spectroscopy. This presentation will cover; fundamentals and background on the CLS technique, recent/ongoing technical developments towards higher sensitivity spectroscopy at COLLAPS and discussion of our recent results, with particular focus on the nuclear moments of neutron deficient thallium and lead isotopes. By expanding the regions of the nuclear chart in which it is possible to observe nuclear moments it will help us develop a richer understanding of the underlying physics and provide a more robust benchmark to theory predictions.

Author: MATTHEWS, Edward

Orateur: MATTHEWS, Edward

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