Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

Reduction of power fluctuation of laser light for collinear laser spectroscopy experiments at BECOLA facility at NSCL[1] RYAN STRUM, BRAD BARQUEST, GEORG BOLLEN, KEI MINIAMISONO, DAVID TARAZONA, NSCL/Department of Physics and Astronomy, MSU, ANDREW KLOSE, PAUL MANTICA, DAVE MORRISSEY, NSCL/Department of Chemistry, MSU, MAX HUGHES, RYAN RINGLE, ALBERTO RODRIGUEZ, DOMINIC ROSSI, CALEB RYDER, STEFAN SHWARZ, CHANDANA SUMITHRARACHCHI, NSCL, MSU, CRISTOPHER GEPPERT, T. U. Darmstadt — The BEam COoler and LAser spectroscopy (BECOLA) facility at NSCL/MSU is designed to determine fundamental properties of the atomic nucleus such as the charge radii, nuclear spins and electromagnetic moments. Commissioning tests of BECOLA have been completed using a stable ^{39}K beam produced from an offline ion source. The ^{39}K beam was then cooled and bunched using a radiofrequency cooler and buncher, propagated collinearly with laser light and resulting fluorescence was detected. The laser light that was co-propagated with the beam was transported to the experimental area from a remote laser room via a single-mode optical fiber. Random rotation of the polarization of the laser light led to a large fluctuation in laser power, and hence a poor signal-to-noise ratio for the fluorescence measurement. A laser power controller was introduced to mitigate the power fluctuations. The performance characteristics of the power-stabilization system as well as the collinear laser spectroscopy of the bunched ^{39}K beam will be discussed.

[1]This work was supported in part by the National Science Foundation, Grant PHY-11-02511.

Ryan Strum
NSCL/Department of Physics and Astronomy, MSU

Date submitted: 29 Jul 2013 Electronic form version 1.4