Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Parametric Four-Wave Mixing Using a Single cw Laser ERIK BREKKE, EMILY HERMAN, LAURA ALDERSON, St. Norbert College — We present progress in using parametric four-wave mixing in a rubidium cell for the generation of coherent emission at 420 nm and 5.4 μm. A simple system using a single external cavity diode laser at 778 nm and a tapered amplifier supplies the needed optical beams. The efficiency is limited by absorption of the 420 nm beam, with single pass outputs of 40 μW. Optical pumping presents a possibility for increased output powers, but radiation trapping must be overcome at high densities. Several methods for increasing the effectiveness of the process are currently underway. The resulting beam at 420 nm presents an intriguing alternative method of exciting Rydberg states in Rubidium atoms.

Erik Brekke
St. Norbert College

Date submitted: 03 Jan 2014 Electronic form version 1.4