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High Precision Spectroscopy of Neutral Beryllium-9 CHUI YU LAU, WILL WILLIAMS, Smith College — We report on the progress of high precision spectroscopy of the 2s2p singlet and triplet states in beryllium-9. Our goal is to improve the experimental precision on the energy levels of the 2s2p triplet J=0, 1, and 2 states by a factor of 500, 100, and 500 respectively in order to delineate various theoretical predictions. The goal for the 2s2p singlet (J=1) state is to improve the experimental precision on the energy level by a factor of 600 as a test of quantum electrodynamics. Our experimental setup consists of an oven capable of 1400C that produces a collimated beam of neutral beryllium-9. The triplet states are probed with a 455nm ECDL stabilized to a tellurium-210 line. The singlet state is probed with 235nm light from a frequency quadrupled titanium sapphire laser, where the frequency doubled light at 470nm is stabilized to another tellurium-210 line. We also present our progress on improving the absolute accuracy of our frequency reference by using an ultrastable/low drift fiber coupled cavity.

Will Williams
Smith College

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