Abstract Submitted
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Fast-beam laser spectroscopy of helium-like silicon and hydrogen-like nitrogen-towards improved precision THOMAS DEVORE, MATTHEW REDSHAW, WEI SHI, EDMUND MYERS — Using Doppler-tuned fast-beam laser spectroscopy and a high finesse build-up cavity excited by a 1319 nm Nd:YAG laser we previously measured the inter-combination $1s2s\ \ ^1S_0$-$1s2p\ \ ^3P_1$ interval in Si^{12+} to be 7230.5(2) cm^{-1}[1]. The precision was limited by uncertainty in the velocity of the $\beta \sim 5\%$ ion beam. An order of magnitude higher precision would provide a clear test of calculations of QED contributions in two-electron ions. We aim to attain this by employing co- and counter-propagating beams and a dual wavelength high-finesse cavity. Work towards developing the necessary 1450 nm narrow-band laser will be presented. Work is also in progress on an improved measurement of the $2S_{1/2}$-$2P_{3/2}$ fine structure - Lamb shift transition in N^{6+}[2]. Our aim is to test QED calculations relevant to the interpretation of high-precision spectroscopy of atomic hydrogen. Our new set-up uses two $^{13}CO_2$ lasers and a 5^o interaction geometry. [1] M. Redshaw and E.G. Myers, PRL **88** 023002 (2002) [2] E.G. Myers and M. R. Tarbutt, in *Hydrogen Atom,* edited by S.G. Karshenboim et al., Springer 2002.

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