

Canada's National Laboratory for Particle and Nuclear Physics Laboratoire national canadien pour la recherche en physique nucléaire et en physique des particules

## Collinear laser spectroscopy results from December 2011

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Ac ce le ming S cience for C anada. Un accéléra eur de la démarche scientifique canadienne.

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Collinear laser spectroscopy on bunched beams

S1341 RMS charge radii of the heavy Rb isotope

S1010 Hyperfine anomaly measurements in Neutron deficient Fr isotopes



What we do



#### The laser systems



#### spectroscopy beamline $\rightarrow$ ISAC hall



long term stabilisation  $\rightarrow$  polarised beams



Figures stolen from Annika



# The laser systems









## Atomic Hyperfine Structure







## S1341 - Laser spectroscopy on neutron rich Rb isotopes







# Physics goal



## <sup>92</sup>Rb fluorescence





#### Target voltage over time





# Looking for <sup>98</sup>Rb





# Looking for <sup>98</sup>Rb





# S1010 – Hyperfine anomaly measurements in Neutron deficient Fr atoms



#### The Bohr Weisskopf effect





#### The Bohr Weisskopf effect





## **Bohr Weisskopf effect**





#### **Bohr Weisskopf effect**

























- <sup>92</sup>Rb fluoresced successfully
- <sup>206,206m</sup>Fr identified, spins, moments and RMS charge radii will be extracted.
- <sup>205</sup>Fr seen, spin, moments and RMS charge radius will be extracted





