

Abstract Submitted
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A Slow Ion Strontium Interferometer CHRISTOPHER ERICKSON, DALLIN DURFEE, BYU — I will discuss an interferometer centered around a laser-cooled source of $^{87}\text{Sr}^+$ ions, which will be split and recombined using stimulated Raman transitions. This will take place inside a conducting cylinder allowing the interferometer to measure electric and magnetic fields with unprecedented precision. Practical applications for the device include the precision measurement of the evolution of fields near solids to reveal their electronic structure. It will also be used for fundamental tests of the basic laws of electromagnetism and the search for a non-zero photon rest mass. The device should detect possible photon rest mass more than 100 times smaller than previous laboratory experiments. Both the details of the device and the theory connecting deviations from Coulomb's inverse-square law to a theory of massive photons will be discussed.

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