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An imaging spectrometer to probe pondermotive-gradient field-ionization[1] JAMIE KAPPLINGER, ERIC WELLS, Department of Physics, Augustana College, Sioux Falls SD 57197 — A spectrometer has been developed with the capability to map Rydberg ions detected by a position-sensitive detector to their initial position within the focal volume of an intense laser pulse. This capability is key to constructing an experiment that can unambiguously verify the existence of the recently proposed pondermotive-gradient field-ionization mechanism.[2] To test the proposed spectrometer design, a simulation was developed to create an intensity-dependent population of Rydberg ions with a finite target temperature. This population was used as an input to the ion-optics simulation program. The simulated results indicate that the design provides sufficient resolution to indicate if the surviving Rydberg ions arise predominantly from the region of the focus with a relatively low pondermotive gradient

[1]This work was supported by a Research Corporation Cottrell College Science Award

[2]E. Wells, I. Ben-Itzhak, and R.R. Jones, Phys. Rev. Lett.**93**, 023001 (2004)

[X] Prefer Oral Session
[ ] Prefer Poster Session

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