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Using cold atoms as a bright cw source for monochromatic ion and electron beams YOANN BRUNEAU, JOSHUA GURIAN, ANDREA FIORETTI, DANIEL COMPARAT, PIERRE PILLET, Laboratoire Aime Cotton, CNRS, Universite de Paris Sud, Orsay, France, LEILA KIME, BERNARD RASSER, PIERRE SUDRAUD, Orsay Physics, 95 Av. des Monts Aureliens, ZA Saint-Charles, 13710 Fuveau, France — State-of-the-art thermal ion and electrons sources have reached a level of performance primarily limited by a high source temperature. Here we report progress in using ionized ultra-cold atoms to create continuous ion and electrons sources. This new source uses a large laser cooled sample of Cs atoms, promoted to Rydberg states before undergoing field ionization. The low velocity dispersion and large sample size should allow for superior, in terms of both brightness and energy dispersion, ion and electron sources. Strong focusing of low energy beams are shown to be possible using SIMION and General Particle Tracer (GPT) charged particle optics software products simulations.

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