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Quasi-monoenergetic electron ring production from laser wake-field acceleration in the blowout regime BRADLEY POLLOCK, FELICIE ALBERT, JOSEPH RALPH, Lawrence Livermore National Laboratory, KEN MARSH, JESSICA SHAW, UCLA, PAUL CAMPBELL, University of the South, NICHOLAS CHAVEZ, ALETHIA BARNWELL, UCLA, ARTHUR PAK, Lawrence Livermore National Laboratory, CHRIS CLAYTON, UCLA, JOHN MOODY, Lawrence Livermore National Laboratory, CHAN JOSHI, UCLA, SIEGFRIED GLENZER, SLAC — We have observed quasi-monoenergetic rings of electrons accelerated to energies above 250 MeV during LWFA experiments in the blowout regime. These experiments utilize the 200 TW, 60 fs Ti:Sapphire Callisto laser system at LLNL and are performed using a He/N gas cell target. The results are compared with 2D OSIRIS simulations, where electrons trapped in the second bucket of the wake are observed to interact with on-axis electrons. In both the experiment and the simulation a ring of electrons is produced with a full-angle of ~ 60 mrad and a narrow energy spread around the ring. Results will be shown for a range of electron densities and gas mixtures to determine the optimal conditions for producing this ring structure. This work was performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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