



Contribution ID: 150

Type: **Contributed Oral**

First results from the E332 Experiment Studying the Near-Field-CTR-based Self-Focusing Effect with High Intensity Electron Beams at FACET-II

Wednesday, 9 November 2022 14:30 (20 minutes)

The Near-Field Coherent Transition Radiation (NF-CTR) generated in the passage of an intense, highly compressed electron beam through a foil produces surface fields that can provide a strong self-focusing force back on the beam itself, and the intense emission of gamma-rays by the beam. This self-focusing effect can be enhanced by passing the beam through multiple foils of order micrometer thickness. The E332 experiment taking place at FACET-II at the SLAC National Accelerator Laboratory will investigate this interaction using the unprecedented beam intensities that will be provided by the facility. In the initial experimental run of FACET-II, the experiment used single foils of varying thickness to develop beam delivery and diagnostic tools, to understand the damage mechanism to the foils by the high intensity beams, and to search for evidence of the NF-CTR focusing effect. The status, first results, and future plans of the E332 experiment will be discussed. The mechanism and observations of beam heating damage to the foils will also be presented.

Acknowledgments

Primary authors: STOREY, Doug (SLAC National Accelerator Laboratory); ANDRIYASH, Igor; Prof. CORDE, Sebastien (LOA, ENSTA Paris, CNRS, Ecole Polytechnique, 15 Institut Polytechnique de Paris, 91762 Palaiseau, France); Dr GILLJOHANN, Max (LOA, ENSTA Paris, CNRS, Ecole Polytechnique, Institut Polytechnique de Paris); KNETSCH, Alexander; KONONENKO, Olena (LOA, ENSTA Paris, CNRS, Ecole Polytechnique, 15 Institut Polytechnique de Paris, 91762 Palaiseau, France); Ms MANKOVSKA, Yuliia (LOA, ENSTA Paris, CNRS, Ecole Polytechnique, Institut Polytechnique de Paris); Mr MATHERON, Aimé (LOA, ENSTA Paris, CNRS, Ecole Polytechnique, Institut Polytechnique de Paris); Dr SAN MIGUEL CLAVERIA, Pablo (LOA, ENSTA Paris, CNRS, Ecole Polytechnique, Institut Polytechnique de Paris); Ms ZAKHAROVA, Viktoriia (LOA, ENSTA Paris, CNRS, Ecole Polytechnique, Institut Polytechnique de Paris); KEITEL, Christoph H.; MONTEFIORI, Samuele; SAMPATH, Archana; TAMBURINI, Matteo; DAVOINE, Xavier; FAURE, Jerome; GREMILLET, Laurent; PASSALIDIS, Stylianos; EKERFELT, Henrik; EMMA, Claudio (SLAC National Accelerator Laboratory); FIUZA, Frederico; GERSTMAYR, Elias (SLAC National Accelerator Laboratory); GESSNER, Spencer (SLAC); Dr HOGAN, Mark (SLAC National Accelerator Laboratory); Dr MARINELLI, Agostino (SLAC National Accelerator Laboratory); PETERSON, J. Ryan; O'SHEA, Brendan (SLAC National Accelerator Laboratory); XU, Xinlu; YAKIMENKO, V; Prof. JOSHI, Chandrashekhar J. (University of California Los Angeles); MARSH, Kenneth (UCLA); Prof. MORI, Warren (UCLA); NAMBU, Noa (UCLA); NIE, Zan (UCLA); WU, Yipeng (UCLA); Dr ZHANG, Chaojie (UCLA); ARINIELLO, Robert (SLAC National Accelerator Laboratory); CARY, John (University of Colorado Boulder); DOSS, Christopher (University of Colorado Boulder); HUNT-STONE, Keenan; LEE, Valentina (University of Colorado Boulder); LITOS, Michael (University of Colorado Boulder); Prof. ADLI, Erik (Department of physics, University of Oslo); CAO, Jiawei; YAN, Jiayang; VAFAEI-NAJAFABADI, Navid (Stony Brook University)

Presenter: STOREY, Doug (SLAC National Accelerator Laboratory)

Session Classification: WGs 4+7 Joint Session

Track Classification: Working Group Parallel Sessions: WG4 Oral: Beam-Driven Acceleration