Abstract Submitted
for the 4CS20 Meeting of
The American Physical Society

Non-Invasive Electron Beam Diagnostics for High-Average Currents[1] JOEL WILLIAMS, Colorado State University, SANDRA BIEDRON[2], 1,2,3,4 — The development of non-invasive charge distribution detectors based on the electro-optic properties of materials has seen various implementations at electron accelerators, and particularly in free-electron laser facilities. Though there are various electro-optic detector arrangements that range in method of data encoding and measurement, the typical electro-optic bunch detector is arranged to measure the passing profile of the electric field of relativistic electron bunches by probing the polarization shift in the electro-optic material with a synched laser. This polarization shift arises out of the electro-optic effect induced in a particular material (e. g. ZnTe, GaP, DAST, etc) by the strong electric field of the passing bunches. These EO-materials have a high 1^{st} order non-linear coefficient, resulting in an index of refraction anisotropy that is linearly proportional to the applied field. Here we explore configurations for integration with operation for both low-energy and high-energy electron beams for a variety of electron pulse configurations including higher average currents.

[1]We acknowledge research support from the DOE Office of Science Graduate Student Research Program, Basic Energy Sciences, Accelerator and Detector Research and Development and Element Aero
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Date submitted: 30 Sep 2020 Electronic form version 1.4