Contribution ID: **172**   Type: **Contributed Oral**

Plasma-photonic diagnostic of plasma-based accelerators.

Thursday, 10 November 2022 13:30 (20 minutes)

Reliable and versatile diagnostic methods are essential for modern accelerator facilities to successfully experiment with energetic particle bunches. Conventionally, an expansive network of tools is implemented in and around interaction points for optimization of experimental conditions; this is true for plasma-based accelerator experiments, with added restrictions to intercepting diagnostics due to the volatile plasma and increasingly intense fields of particle bunches. Here, we present a novel diagnostic that utilizes the afterglow light emitted from the plasma after interacting with an electron beam, demonstrate its utility to provide spatio-temporal synchronization between electron beam and plasma generating laser pulse, and discuss how it can be used for optimization of many plasma-based accelerator experimental parameters.

Acknowledgments

Primary author: SUTHERLAND, Andrew (University of Strathclyde)

Co-authors: AHMAD FAHIM, Habib (University of Strathclyde and Cockcroft Institude); HEINEMANN, Thomas (University of Strathclyde / DESY); Dr MANAHAN, Grace (University of Strathclyde); Mr BOULTON, Lewis (Cockcroft Insitute, University of Strathclyde); Mr DICKSON, Alex (University of Strathclyde); BERMAN, Lily (University of Strathclyde); HIDDING, Bernhard (University of Strathclyde); DOSS, Christopher (University of Colorado Boulder); LITOS, Michael (University of Colorado Boulder); KNETSCH, Alexander; EKERFELT, Henrik (SLAC National Accelerator Laboratory); ARINIELLO, Robert (SLAC National Accelerator Laboratory); Dr HOGAN, Mark (SLAC National Accelerator Laboratory); CLARKE, Christine (SLAC National Accelerator Laboratory); O'SHEA, Brendan (SLAC National Accelerator Laboratory)

Presenter: SUTHERLAND, Andrew (University of Strathclyde)

Session Classification: WG5: Beam Sources, Monitoring, and Control

Track Classification: Working Group Parallel Sessions: WG5 Oral: Beam Sources, Monitoring, and Control