Contribution ID: **337** Type: **talk**

E-310 Trojan Horse-II at FACET-II and the STFC PWFA-FEL programme

Thursday, 19 September 2019 19:00 (20 minutes)

The beam-driven plasma photocathode wakefield acceleration concept [1] allows decoupled laser injection of electron bunches with emittance and brightness reach many orders of magnitude better than state-of-the-art [2]. After successful proof-of-concept demonstration at SLAC FACET in the "E-210: Trojan Horse"project [3], we now embark on the next experimental phase around the "E-310: Trojan-II"flagship and five related experiments at FACET-II, where better incoming beams and improved setup may unleash the full potential of the scheme. Plans for FACET-II experiments and complementary progress and plans on hybrid LWFA->PWFA with automatically synchronized plasma photocathodes will be presented. Looking further ahead, the UK STFC has initiated the UK-US "PWFA-FEL"programme, which aims to push exploitation of the ultralow emittance and ultrahigh brightness of beams which may be obtainable from upcoming installations of plasma photocathodes. This project will explore the benefits of ultrahigh brightness beams and will also be used to assist experimental programmes on PWFA and plasma photocathodes at Daresbury's CLARA facility and at FACET-II, and at future hybrid LWFA->PWFA systems.
[1] PRL 108, 035001 (2012)
[2] Nat. Comm. 8,15705 (2017)
[3] Generation and acceleration of electron bunches from a plasma photocathode, Nat. Phys., accepted (2019)

Primary authors: ROSENZWEIG, James (UCLA); HOGAN, Mark (SLAC National Accelerator Laboratory); KARGER, Oliver (University of Hamburg, Institute for Experimental Physics); HEINEMANN, T. (Deutsches Elektronen-Synchrotron DESY; Scottish Universities Physics Alliance, Department of Physics, University of Strathclyde); HABIB, Ahmad Fahim (SUPA, Department of Physics, University of Strathclyde, Glasgow, UK and Cockcroft Institute, Sci-Tech, Daresbury, UK.); YAKIMENKO, Vitaly (SLAC); LITOS, Michael (University of Colorado Boulder); CARY, John (Tech-X Corporation); CLARKE, Jim (STFC); SUTHERLAND, Andrew (University of Strathclyde); Prof. RAUBENHEIMER, Tor O. (Stanford University); HEMSING, Erik (SLAC); SCHERKL, Paul (University of Strathclyde); ULLMANN, Daniel (University of Strathclyde); BEATON, Andrew (University of Strathclyde); NUTTER, Alastair (University of Strathclyde); BOULTON, Lewis (University Of Strathclyde / DESY); Dr WILLIAMS, Peter (STFC Daresbury Lab.); ANGAL-KALININ, Deepa (STFC, Daresbury Laboratory); Dr MCNEIL, Brian (University of Strathclyd & Cockcroft Institute); ANDONIAN, Gerard (UCLA); Dr MANAHAN, Grace Gloria (University of Strathclyde); KNETSCH, Alexander (Deutsches Elektronen-Synchrotron DESY); O'SHEA, Brendan (SLAC National Accelerator Laboratory); BRUHWILER, David; HIDDING, Bernhard (Scottish Universities Physics Alliance, Department of Physics, University of Strathclyde; Cockcroft Institute, Sci-Tech Daresbury)

Presenter: HIDDING, Bernhard (Scottish Universities Physics Alliance, Department of Physics, University of Strathclyde; Cockcroft Institute, Sci-Tech Daresbury)

Session Classification: WG1 - Hybrid staging and future PWFA experiments

Track Classification: WG1 - Electron beams from plasmas