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Beam Loading in a Plasma Wakefield Accelerator at Daresbury Laboratory

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Theory and particle-in-cell simulation results for beam loading using at the proposed Plasma Accelerator Research Station (PARS) at Daresbury Laboratory are presented. Results show an acceleration gradient of approximately 2 GV/m is possible, and the variation of the final energy spread and emittance of the witness beam with different beam and plasma parameters is investigated.

Primary author: Mr HANAHOE, Kieran (University of Manchester)

Co-authors: Dr ANGAL-KALININ, Deepa (ASTeC); Dr XIA, Guoxing (Cockcroft Institute and the University of Manchester); Dr JONES, James (ASTeC); Dr SMITH, Jonathan (Tech-X UK Ltd); Dr METE, Oznur (University of Manchester)

Presenter: Mr HANAHOE, Kieran (University of Manchester)

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