

Abstract Submitted  
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**Injection tolerances for AWAKE: towards an applications-oriented accelerator** JOHN FARMER, LIVIO VERRA, Max Planck Institute for Physics, LINBO LIANG, University of Manchester, MARTIN WEIDL, Max Planck Institute for Plasma Physics, ALEXANDER PUKHOV, Heinrich Heine University Dsseldorf, ALLEN CALDWELL, Max Planck Institute for Physics, EDDA GSCHWENDTNER, CERN, PATRIC MUGGLI, Max Planck Institute for Physics — Wakefield acceleration schemes are typically limited either by dephasing or depletion of the driver. The AWAKE project at CERN avoids these issues by using the SPS proton beam to accelerate an externally injected electron bunch, paving the way to high energy gain in a single stage. However, such a scheme brings with it additional challenges, not least the merging of the electron and proton beamlines. Simulations play a vital role in understanding the fundamental physics which set the tolerances for injection. We here present recent results on the witness constraints for an accelerated beam suitable for applications, and the development in simulation tools which was necessary to allow this work.

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