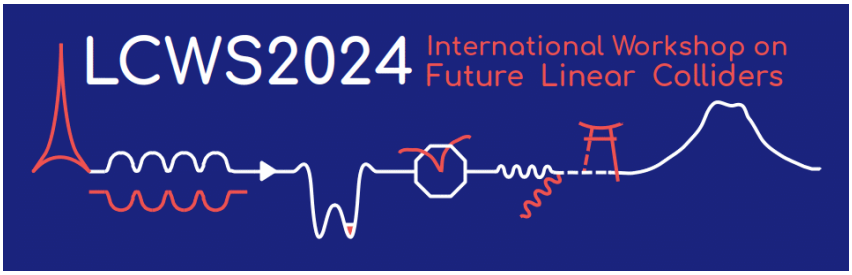

Contribution ID: **178** Type: **Oral presentation (in person)**

RF breakdown studies at nanosecond timescales using structure wakefield acceleration

Wednesday 10 July 2024 16:20 (20 minutes)

High-energy particle accelerators are crucial to the next big discovery in particle physics. To reduce the size and cost of particle accelerators, increasing the accelerating gradient (energy gain per unit length for the particle beam) is of critical importance. Advanced accelerator concepts (AACs) hold the promise of revolutionary future particle colliders with dramatically higher gradients than what conventional accelerator technologies allow. One advanced concept, structure wakefield acceleration (SWFA), aims to raise the gradient and the efficiency by confining the microwave energy in a short and intense pulse. The SWFA concept has inspired a new approach to generate nanosecond RF pulses with a high peak power (on the order of a few hundred megawatts). By using the short RF pulses to study RF breakdown on the nanosecond time scale, we have demonstrated that the short pulse length could potentially mitigate the impact of RF breakdown, and the beam-driven short-pulse acceleration technique could enable a new class of compact accelerators.

Apply for poster award

Primary author: LU, Xueying (Northern Illinois University / Argonne National Lab)

Presenter: LU, Xueying (Northern Illinois University / Argonne National Lab)

Session Classification: Normal conducting RF

Track Classification: Accelerator: Normal Conducting RF