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Status and plan for beam-driven THz wakefield structure

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The global collaboration between PAL, NIU, ANL, and KU is ongoing to develop an electron beam-driven THz power generation and two-beam acceleration in SWFA. We successfully demonstrated the fabrication of a 0.2 THz structure and the characteristic of wakefield using the beam-based experimental measurement. of a 0.2 THz structure a few years ago. The success of a new fabrication method led us to the next step, high-power generation. Currently, we aim to demonstrate the extraction of RF power with its peak of >1 GW from a 0.4 THz structure.
The RF power generated from the 0.4 THz structure designed is expected to reach a peak power of 3.3 GW and an average power of 1.5 GW (averaged over a single pulse) by using a bunch train with 16 bunches, each with a charge of 1 nC as a drive beam.
We present the current status of R&D towards high-power demonstration, including future plans.

Working group

WG4 : Novel structure acceleration

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