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Progress on experimental demonstration of high-power generation from 0.4 THz corrugated structure

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A collaboration is underway to develop and demonstrate GW-level power generation in the sub-THz frequency range. Two key components–wakefield structure and electron bunch train–were prepared for the demonstration. A 5-cm long corrugated structure was fabricated using two thin metallic plates with through-holes of different inner diameters. The plates were fabricated by lithography and bonded by high-pressure, high-temperature boding process. The fabricated structure, whose fundamental mode frequency is 0.4 THz, was powered by an electron bunch train with 16 bunches (1 nC per bunch). Efforts are ongoing to achieve results comparable to simulations, targeting a peak power of 3 GW and a maximum deceleration field of 700 MV/m within the bunch. We present the most recent experimental results.

Footnotes

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