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Optimizing beam configuration and envelope to maximize the wakefield generated by sub-THz Power Extraction Tube

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To maximize the wake field, we have to minimize the beam loss and adjust the bunch timing.
First, for minimizing the beam loss, it is essential to manage the beam size and the slope.
To prevent a loss from the beam pipe, we have to minimize the beam size.
Additionally, if the slope is too steep, then the particles may collide to beam pipe and be lost.
Therefore, it's important to avoid making the slope too steep.
Second, we have to match the bunch timing to get the maximum decelerate phase through the structure. So that we can maximize the wake field.
In this paper we try to make the beam size small enough to transport without loss by adjusting the strength and the position of the focusing element.
Also, we optimize the gun phase and the beam timing to match the bunch timing.
We use the General Particle Tracer(GPT) for the simulation.

Paper submission Plan

No

Best Presentation

Yes

Contribution track

ICABU WG2. Beam Physics, Diagnostics & Novel Techniques

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