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THz resonator based electron beam manipulation

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In recent years, with the development of powerful THz source technologies, THz structures are widely utilized for electron beam manipulation, such as acceleration, deflection, compaction and diagnostics. Taking the bunch length measurement as an example, combining with high field strength and high resonant frequency, the THz structure based deflector could reach femtosecond or even sub-femtosecond resolution. In this paper, a 0.1THz Fabry-Perot resonator based structure will be introduced, which could provide time-dependent deflection for short electron beam to resolve the bunch length with high resolution. By adjusting the relative orientation of the beam direction and the E-field direction of the incident THz source, this structure is also potential for beam acceleration.

Footnotes

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