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Prospects of transverse deflecting structures as diagnostic tools for linacs

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Transverse deflection structures (TDS) are used as diagnostic tools for linac-based accelerators. Since their reintroduction in the early 2000s, their development has been continued in several laboratories, in particular to improve temporal resolution given the ongoing tendency of getting shorter and shorter electron bunches. Furthermore, the development of a new TDS with variable streaking direction has opened up new possibilities to diagnose, using tomographic techniques, multidimensional phase space to investigate complex beam dynamics. In recent years, in parallel with the development of TDS based on RF structures, TDS based on self-induced fields in corrugated or dielectric structures, the so-called passive streaking, have also been used as diagnostics to retrieve the temporal properties of particle beams. In this contribution, these devices will also be discussed by comparing advantages and disadvantages with TDS based on RF structures.

Footnotes

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