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An innovative physical design with high acceleration gradient and fully electric focusing in drift tube linac

Monday 2 June 2025 16:00 (2 hours)

The beam dynamic design of a Drift Tube Linac (DTL) using plate drift tube combined an Interdigital H-mode (IH) cavity is proposed. This propose indicate that a DTL with a plate drift tube has an additional transverse focusing field without significant sacrifice to the longitudinal accelerating field. Based on this property, we established a new transverse focusing theory and completed a novel dynamic design that eliminates the need for inner focusing magnets, consequently leading to a higher acceleration gradient compared to existing DTL designs. This innovative design strategy can make the DTL more compact, cost-effective, and user-friendly beam-tuning solution for medium-energy particle acceleration.

Footnotes

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