



Contribution ID: 91

Type: **Poster Presentation**

Optimization of the kicker/BPM design with tapered strip-lines

Tuesday, 10 September 2024 16:00 (1h 30m)

The injection kicker design exploiting strip-lines and linear taper connections of the strip-lines to the feedthroughs was proposed and has been successfully used in the DAFNE electron-positron collider [1]. Such a design has helped to reduce the device beam coupling impedance, to improve the uniformity of the deflecting electromagnetic fields and to provide better matching with the feedthroughs.

In this paper we propose using nonlinear taper connections in order to decrease further the beam coupling impedance. We have performed numerical simulations and analytical studies of several nonlinear tapers demonstrating that the coupling impedance can be substantially reduced while keeping or even improving the transfer (signal) impedance of the strip-line kickers (or BPM).

The effect of the nonlinear tapering is particularly important for short strip-line devices when the taper length is limited due to lack of available space and/or when the strip-lines are moved closer to the beam in order to increase the device shunt (signal) impedance.

Footnotes

[1] David Alesini et al. In: Phys. Rev. ST Accel. Beams 13 (2010), p. 111002. doi: 10.1103/PhysRevSTAB.13.111002.

Funding Agency

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement [871072]

I have read and accept the Privacy Policy Statement

Yes

Primary author: BILANISHVILI, Shalva (Istituto Nazionale di Fisica Nucleare)

Co-author: ZOBOV, Mikhail (Istituto Nazionale di Fisica Nucleare)

Presenter: BILANISHVILI, Shalva (Istituto Nazionale di Fisica Nucleare)

Session Classification: TUP: Tuesday Poster Session

Track Classification: MC3: Beam Position Monitors