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## Design study for transverse deflecting cavity-based de-chirper

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A collaboration is underway to experimentally demonstrate a novel approach using deflecting cavities to control a particle beam's longitudinal chirp. While a series of deflecting cavities produces negative chirp, the de-chirping process requires additional modification on the beamline. It has been known that inserting negative drift sections between TDCs enables de-chirping. While the original idea of negative drift requires a series of five quadrupole magnets, the experimental conditions cannot provide enough quadrupoles and space for them. Additionally, it is confirmed that a negative drift using three quadrupoles introduces a significant increase in beam size and emittance in one of the transverse planes. Thus, we propose a new method to enable de-chirping by inserting a series of three quadrupoles. Here, we form a negative identity transport instead of the negative drift. Simulations have been performed to explore this new opportunity. We present the result of this design study.

### Footnotes

### Paper preparation format

### Region represented

America

### Funding Agency

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