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Beam superimposition with bent crystals

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Bent crystals have been widely used to deflect high energy particles in the last decades and the precise knowledge of their properties has been crucial for their deployment in particle accelerator complexes. Based on a time-reversal approach to the channeling effect, the UA9 collaboration is investigating the possibility to merge two particle beams impinging with specific angles on a bent crystal. This process would be an intriguing way to increase the luminosity of particle beams through beam superimposition, overcoming limitations due to Liouville's theorem. An experimental setup and preliminary tests carried out at the CERN SPS facility to prove this concept will be presented.

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