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Monte Carlo Modelling of High-Energy Channeling Studies

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Channeling in bent crystals is becoming a reliable and efficient technique for collimating beams. At CERN, the installation of crystals in the LHC is under scrutiny by the UA9 collaboration with the goal of investigating if they are a viable option for the collimation system upgrade. This paper describes a new model of channeling in bent crystals which has been developed from scratch in order to be implemented in the FLUKA Monte Carlo code simulating particle transport and interactions. It enables energy deposition calculations in crystals as well as the tracking of secondary particles downstream. Experimental data from the experiment performed by the UA9 collaboration on the H8 beamline (CERN North Area, [3]) has been analyzed and the comparison with the results of simulations is presented.

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