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Optimization of Heating Problems using Granular Positron Converters

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At GeV incident electron energies on axially oriented crystals, channeling radiation is providing a powerful source of photons ; these photons generate a large number of e^+e^- pairs in a converter. The hybrid positron source associating a crystal-radiator and an amorphous converter, with a bending magnet in between, looks interesting for the deposited energy and its density in the amorphous converter; such concept has been adopted for the CLIC baseline positron source. Using a granular converter made of small spheres, improve the heat dissipation and allow us to consider such solution for very intense beams. The main characteristics of a hybrid positron source using a granular converter are described; they concern the photons as well as the positrons. Precisions on the deposited energy and its density in the target, are given. Methods of cooling are also reported. Solutions compatible with ILC conditions and requirements are presented.

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