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Case Study: Energy deposition in superconducting magnets in IR7

The IR7 insertion of the Large Hadron Collider (LHC) is dedicated to beam cleaning with the design goals of absorbing part of the primary beam halo and of the secondary radiation. The tertiary halo which escapes the collimation system may heat the cold magnets at unacceptable levels, if no absorber is used. In order to assess the energy deposition in the sensitive components, extensive simulations were performed with the intranuclear cascade code FLUKA. The straight section and the dispresion suppressors of IR7 were fully implemented. A modular approach in the geometry definition and an extensive use of user-written programs allowed the implementation of all magnets and collimators with high precision, including flanges, steel supports and magnetic field. The talk will be focused on the number and location of additional absorbers needed to keep the energy deposition in the coils of the magnets below the quenching limit.

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