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Radiation challenges for magnets in present and future colliders (HL-LHC, FCC, Muon Collider)

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Superconducting magnets in high-energy particle colliders are often exposed to a harsh radiation environment. In many cases, the magnets need to be sufficiently shielded in order to dissipate the radiation-induced heat and to protect equipment against long-term radiation damage. The secondary radiation fields and shielding requirements must be thoroughly studied during the design phase of collider facilities. This contribution gives an overview of present and future high-energy colliders and their radiation environment and highlights the differences between hadron and lepton colliders.

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