

Cryogenics

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Abstract

Beam-induced heating are deposited in the LHC cryo-assemblies through several processes and by the circulating and colliding proton beams themselves. Measurements of beam-induced heating were performed on the cryogenic system during the 2012 beam operation, mainly on the beam screens and magnet cold masses. Analyses of the measurements have allowed to correlate the beam-induced heating with the beam parameters, to review the heat deposition scaling laws, to extrapolate data for post-LS1 beam operation for different bunch spacing and to identify cooling limitations and consolidations of critical cryo-assemblies, including the continuous cryostats, the stand-alone magnets and the inner triplets.