Workshop on Radiation Effects in Superconducting Magnet Materials 2015 (RESMM'15)

Contribution ID : 3

Study on Magnesium Diboride SC Links for HL-LHC

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Content :

In the framework of the upgrade of the LHC machine, cold powering of the LHC magnets foresees the removal of the power converters and distribution feedboxes from the tunnel and its relocation on surface.
The Magnesium Diboride (MgB2) connecting lines in the tunnel will be exposed to the debris from 7+7 TeV p-p interaction.
The SC Links will run at about 1 m above the beam pipe, while in the Connection Box (where the cables of the SC Links are connected to the loads) will be closer to the beam.
The debris in the High Luminosity configuration and its effect (energy deposition and displacement per atom) on the MgB2 SC links and the connection box are evaluated.
The effects of neutrons on the Boron consumption by thermal neutrons is negligible.
The results are normalized to an integrated luminosity of 3000 fb^-1, value that represents the LHC High Luminosity lifetime.
The dose delivered to the SC Links seems not be critical.
Further studies are necessary to correlate the induced dpa to the superconducting properties.

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