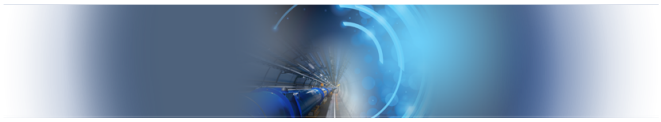

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Cryogenic safety of the superconducting ALPI accelerator at INFN-LNL

Thursday, 22 September 2016 09:50 (20 minutes)

The superconducting linac ALPI at INFN-LNL is composed of 20 identical cryostats housing, at a group of four (or two), 74 superconducting QWR type cavities: 58 resonators are made of copper with Nb sputtered on the internal surface and 16 are made of Nb bulk. In each cryostat is installed a 100 liter volume LHe reservoir feeding by gravity the QWR's. The thermal shield around is cooled by GHe at 6 bar abs at 60-80 K. The linac ALPI is a post-accelerator which can receive heavy ions from either the 16 MV Tandem Van de Graaf or from the superconducting injector PIAVE. The latter is composed by an ECR source, two superconducting RFQ, and two cryostats each containg four superconducting bulk Nb QWR. The ALPI cryostats are cooled by a Helium refrigerator whose refrigerator capacity is 1200 W at 4.5 K and 3900 W additional at 60-80 K. PIAVE cryostats are cooled by a separate TCF50 helium refrigerator. The complex ALPI-PIAVE is installed in a semi-open removable concrete tunnel in the same building where the two helium refrigerators are also present. The cryogenic safety issues of the linac plus the injector will be outlined, both for the equipment and the personnel.

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