

Academia-Industry Matching Event on Superconductivity for Accelerators for Medical Applications



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Cryogenic design and colling methods for rotating SC magnets

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The cryogenic design of rotating superconducting magnet, especially for particle therapy, is governed not only by the operating conditions but also by end-user's environment. These specific design considerations, presented as an introduction, narrow down the different possible cryogenic cooling options for such superconducting systems. In light of these considerations, the gantry system design studied at CEA Saclay will be discussed and the chosen "cryocooling" method evaluated. A focus on thermal links for cryocooling, with a particular emphasis on the conductive thermal links, will be presented where the pros and cons will be assessed. Based on this assessment, we propose an alternative two-phase cryogen thermal links: the pulsating heat pipe and discuss their thermal performance and advantages. To conclude, the recent developments of pulsating heat pipe thermal links under development at CEA Saclay will be presented.

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