

thinfilms and NEW IDEAS for SRF

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High Tc superconducting films for FCC beam screens

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CERN is studying the feasibility of a new proton-proton collider reaching an unprecedented centre-of-mass energy of 100 TeV, the Future Circular Collider (FCC). The proton beams will be steered by 16 T superconducting magnets cooled at 1.9 K, whose cold bore is protected from the intense synchrotron radiation by a coaxial beam screen maintained at 50 K, temperature which stems from a compromise between vacuum quality and cryogenic efficiency. Beam dynamics and stability, in particular at injection, require that the surface impedance of this screen which surrounds the proton beam be as low as possible. CERN is currently exploring the option of using a High-Temperature Superconductor (HTS) coating for this purpose. We will discuss in detail the motivations for this novel application of HTS, and the status of the study conducted in collaboration with several European Institutions.

Summary

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