



Contribution ID: 78

Type: **not specified**

Enhancement of the lower critical field in Fe(Se,Te)-coated Nb structures for superconducting radio-frequency applications

Tuesday 17 September 2024 15:26 (23 minutes)

Bulk Nb superconducting radio-frequency (SRF) cavities are widely used in accelerators, and their accelerating gradient and general performance are limited by the superheating field (Bsh). To push the theoretical limit of the Bsh, new multilayer structures are required. We fabricated Fe(Se,Te)-coated Nb films using pulsed laser deposition, performed structural characterizations, and measured the transport and magnetic properties for this superconductor-superconductor bilayer structure with smooth surface. Additionally, the measured B_{c1} of Fe(Se,Te)-coated Nb film is greatly enhanced, while the Bsh of the Fe(Se,Te) layer is expected to be higher than that of bulk Nb, yet the superconducting transition temperature (T_c) is less than 10 K. We presents the first fabrication of a new coating layer: Fe(Se,Te) deposited on Nb, showing the possibility of using iron-based materials for multilayer structures in SRF cavities.

Presenter: LIN, Zefeng (Institute of Physics, Chinese Academy of Sciences)

Session Classification: Beyond Nb: Alternate materials and mulilayer structures

Track Classification: Beyond Nb: Alternate materials and multilayer structures