Contribution ID: **51** Type: **not specified**

Layered iron-based superconductors for SRF cavities

Monday 16 September 2024 11:57 (33 minutes)

“High-Tc superconductors (HTS) have recently become competitive options in superconducting magnet applications. It is natural to investigate their potential in superconducting RF (SRF) cavities. The most advanced HTS, the copper oxide family, has been successfully developed for low-field cavities for dark matter experiments under strong static magnetic fields. However, their gapless nature may be a fundamental limitation to be used in high-field applications. Iron-based superconductors are known to have gap-full structures and, therefore, potentially an interesting candidate for SRF cavities. In this talk, we discuss some of the first theoretical attempts to calculate the surface resistance and field reach of layered iron-based superconductors and compare them with experimental data available in the literature.

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Session Classification: SRF limits

Track Classification: SRF limits