Contribution ID: **489** Type: **Parallel**

# Superconducting RF Cavities R&D Towards Future High Energy Accelerators

*Friday 6 July 2018 09:00 (22 minutes)*

Modern accelerators for High Energy Physics (ILC, FCC-ee, FCC-he, CEPC) demand efficient operation of SRF cavities. Since low cryogenic losses and high quench fields are essential to save in both capital and operational cost, basic SRF R&D on niobium cavities is focused on increasing the quality factor at the highest accelerating gradient.
The talk will be focused on the description of the strategies adopted to increase quality factor and accelerating gradient in SRF cavities. Innovative surface preparations can allow for future SRF-based accelerators that wouldn't otherwise be feasible, by cutting the capital cost of their realization.
Layered SRF surfaces and smart engineering of the impurities profile at the RF surface are promising technologies that may substantially decrease the cost of accelerators and possibly allow for higher duty cycle operation. The physics behind these new technologies will be described and the impact their application would bring in the accelerator world will be analyzed in detail.
Part of the talk will also address the description of new directions being explored in the SRF community to further increase accelerating gradients beyond the current limitations and on the cost savings they might allow.

**Primary author:** CHECCHIN, Mattia (FNAL - IIT)

**Presenter:** CHECCHIN, Mattia (FNAL - IIT)

**Session Classification:** Accelerators: Physics, Performance, and R&D for Future Facilities

**Track Classification:** Accelerator: Physics, Performance, and R&D for Future Facilities