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Superconducting Thin Films Studies at CERN

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Thin film coated superconducting radiofrequency (SRF) accelerating cavities are among the most promising technologies to provide a cost efficient accelerator in the framework of the Future Circular Collider (FCC) study.
We will give a broad overview of the currently on-going R&D topics such as the optimization of surface treatment by electropolishing, the elaboration of niobium thin films by High Power Impulse Magnetron Sputtering (HiPIMS) with an emphasis on the effect of the ion bombardment energy and at last the first results regarding the elaboration of A15 materials (Nb_3Sn, V_3Si) using bi-polar HiPIMS coating technique.
Finally we will discuss the approach to scale up the current state-of-the art coating techniques towards 400MHz cavities as well as to the newly proposed Slotted Waveguide Elliptical cavity (SWELL) design presenting the first results of HiPIMS Nb coatings on 400MHz elliptical cavities.

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