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## FCC-hh Nb<sub>3</sub>Sn wire development: superconducting and magnetic properties of prototype samples

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Nb<sub>3</sub>Sn is the principally envisaged superconductor for the Future Circular Collider (FCC-hh) dipole magnets, in principle able to reach the required specifications (non-Cu  $J_c=1.5$  kA/mm<sup>2</sup> at 16T and 4.2K). We present the superconducting and magnetic characterization of prototype internal tin Nb<sub>3</sub>Sn wires, manufactured at the Bochvar Institute (RU) with different designs and heat treatments. In particular, the possible inhomogeneities related to the manufacturing process were investigated by means of magnetization methods: AC susceptibility was used to assess the critical temperatures of the samples, evaluating as well the longitudinal inhomogeneities. The local properties were investigated using scanning Hall probe microscopy (SHPM): field maps of the Meissner-state revealed the effective geometry of the prototype design (sub-elements structure, barriers, width of resistive separators) whereas the scans of the remnant field enabled us to calculate the local critical currents. For these purposes, all the samples were carefully prepared reaching slice thicknesses of about 10  $\mu$ m. These results will be related to the microstructural analysis performed at USTEM (TU Wien).

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