

High Field Magnets for Future Accelerators

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Abstract – The update of the European Strategy for Particle Physics received and endorsed by the CERN Council in June 2020 has put a strong emphasis on reinforcing R&D on crucial technologies for the future of HEP, with a specific focus on high-field superconducting accelerator magnets (HFM), including HTS. This recommendation comes at a very crucial moment in the development and construction of superconducting magnets for accelerators. On one side it has been proven that Nb₃Sn can surpass the state-of-the-art Nb-Ti technology, generating fields of “accelerator quality” in excess of 12 T. At the same time, a focused EU effort enfolded over the past ten years has resulted in exciting and to some extent intriguing results, on the potential of HTS (REBCO) to go beyond the known limits of Nb₃Sn. This talk provides a personal perspective on the status of development, challenges and potential of Nb₃Sn and HTS for high-field accelerator magnet applications.

Keywords (Index Terms) – High field accelerator magnets, Nb₃Sn, REBCO, BSCCO.

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