

Short and mid-term prospects of HTS conductors in high-field split magnets for neutron scattering

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HTS materials have gradually become a serious option for high-field user magnets in the last few years. Solenoid magnets including HTS inserts and operating above the 23 T limit are routinely used in a few facilities for NMR experiments among others. Standalone HTS magnets with lower operating fields but featuring high availability have also become commercially available, especially using 1st generation HTS conductors.

We will present the performance gains that could be achieved by upgrading existing and well-proven split magnet designs in the 15 T field range with present day HTS magnet technology i.e. using REBCO 2nd generation coated conductors. We will then discuss the challenges raised by such an LTS-HTS integration, especially in terms of cryogenic stability and thus operability.

We will then present the possibilities offered by full-HTS alternatives while considering different cryogenic approaches. We will discuss what exists and what has to be developed in the next years to help a new generation of 20 T-class HTS user split magnets becomes a reality at a neutron facility.

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