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Sat-Af-Mem1-07: Design of a REBCO large bore 10 T split-magnet and validation on prototype pancakes

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REBCO HTS material makes it possible to consider very high engineering current densities in coil windings even above 10 T with operation temperatures up to 30 K. In this work, we present the design of a 500 mm bore split-coil magnet made of two stacks of REBCO double-pancakes. It is developed as a platform offering either 10 T in a mid-plane room temperature bore for magneto-science, or up to 14 T when removing the midplane spacer, thus exceeding the state of the art for LTS background magnets. The electro-magnetic and mechanical design are presented with a focus on stress management and quench protection. The tests results of several prototype pancakes will be presented to validate key aspects of the design, from mechanical performance to dielectric strength.

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