



32 Tesla All-Superconducting Magnet

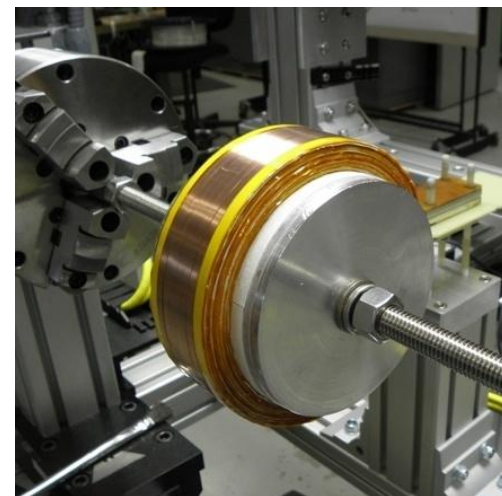
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A 32 Tesla all-superconducting magnet based on $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ coated conductor is being designed for fabrication and installation as a user facility at the National High Magnetic Field Laboratory.

The enabling technology is a conductor consisting of YBCO deposited on an ultra-strong tape. This conductor has been studied intensely this past year for its characteristics and suitability for the fabrication of high field magnets.

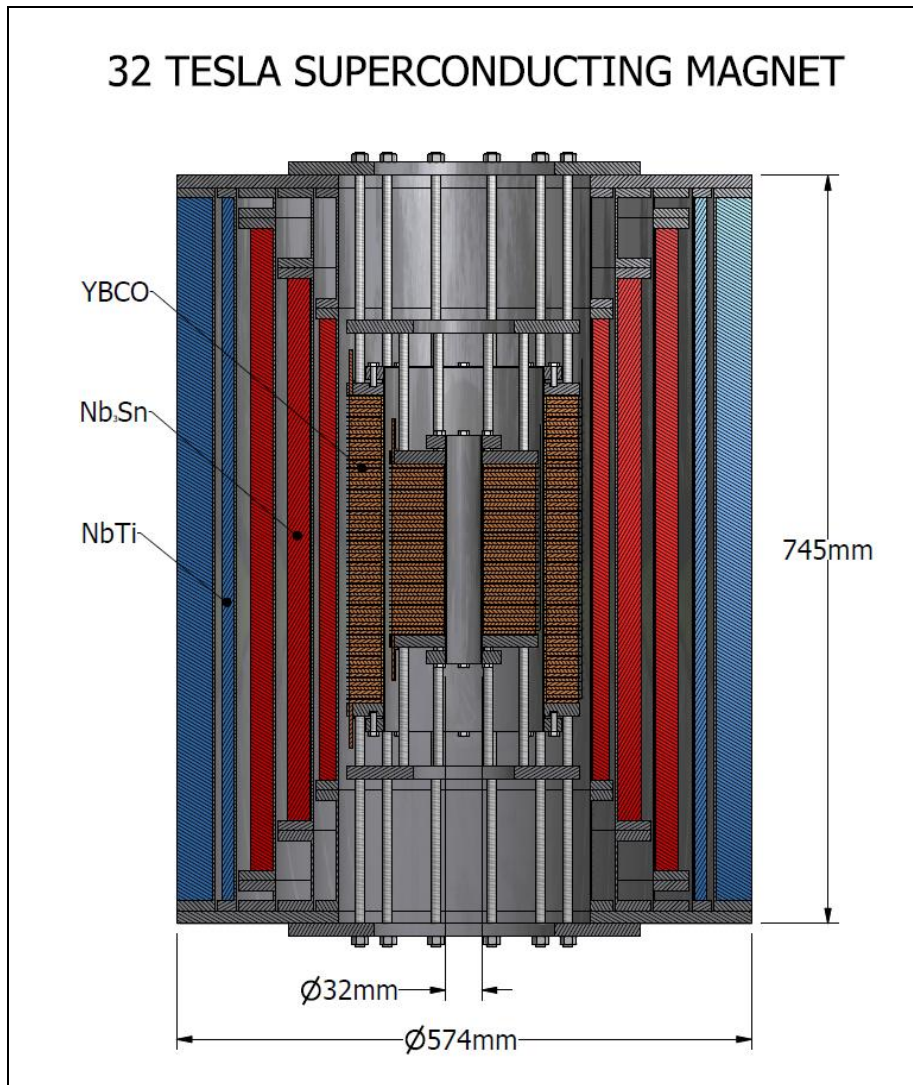
As a consequence of the increased knowledge of the conductor, magnet design and construction methods are being adapted accordingly. Traditional pancake winding and the alternative layer winding methods were studied extensively, including the invention of new winding equipment and fixtures. As a result, the program is poised to proceed with a series of test coils for performance and quench protection studies.



(Top) Winding of sixty-layer model coil.
(Bottom) Full scale model pancakes for YBCO coils of the 32T magnet.

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Progress in the achievement of higher field magnets with YBCO conductor is important to many magnet related activities including Condensed Matter Physics, Nuclear Magnetic Resonance and High Energy Physics. Developments made on the 32 T magnet project will be a major contributor to that effort.

The findings of the conductor characterization activity of the 32 T project feed back to the commercial supplier and are vital to the development of YBCO as a viable magnet conductor for all the high field applications.

This state of the art magnet system will support advanced technology development of conductor and magnets by the participating industrial suppliers.