

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

STATUS OF HTS MAGNET DEVELOPMENT FOR SPARC¹

BRANDON SORBOM, DANIEL BRUNNER, JESSICA CHENG, Commonwealth Fusion Systems, VINCENT FRY, ZACH HARTWIG, AMANDA HUBBARD, BRIAN LABOMBARD, Massachusetts Institute of Technology, ROBERT MUMGAARD, Commonwealth Fusion Systems, ERICA SALAZAR, RUI VIEIRA, DENNIS WHYTE, Massachusetts Institute of Technology, SPARC TEAM TEAM — The production of high-temperature superconductors (HTS) has recently reached commercial maturity at the scale and performance required to build large bore, high-field magnets, enabling a breakthrough opportunity to accelerate fusion energy. This poster will give an overview of the magnet work performed over the past year towards the development of HTS magnet systems to be used in the SPARC device. Several large-scale cable tests were successfully performed at the SULTAN facility at fields up to 10.9 T carrying SPARC-relevant JxB loads over 1000's of cycles. In addition to the experimental work, the design of a TF model coil has begun with the goal to build and test it within the next two years. The SPARC team has collaborated with HTS centers of excellence around the world to measure the performance of HTS samples from multiple vendors up to 24 T as well as building the facilities to perform this work in-house in the future. Finally, the team has actively engaged the HTS industry, becoming the largest customer of HTS tape in the world and working with suppliers to increase tape performance and rapidly scale the industry to volumes relevant to SPARC and then ARC.

¹Research supported by Commonwealth Fusion Systems

Brandon Sorbom
Commonwealth Fusion Systems

Date submitted: 02 Jul 2019

Electronic form version 1.4