

Abstract Submitted
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Overview of SPARC on the High-Field Path to Fusion Energy¹

DAN BRUNNER, Commonwealth Fusion Systems, SPARC TEAM — The SPARC mission is to create and confine a plasma that produces net fusion energy for the first time. High-temperature, high-field superconductors are the fundamental technology that enables SPARC to be built at a relatively small scale compared to other proposed net-energy tokamaks; the smaller scale enables it to be completed on a faster timeline. The two major milestones of the 3-year Phase 1 of the project to be completed in June 2021 are (1) design, construction, and operation of a SPARC-relevant toroidal field model coil (TFMC) and (2) a ready-to-construct engineering design of the SPARC tokamak and facility. The second year of R&D was very successful, the TFMC design is complete and the team has begun manufacturing of the coil and procurement of other components. In parallel, the physics and engineering design of the SPARC tokamak and facility has been baselined to a “V2”, with no expected major changes through the remainder of the project. The physics performance projections remain robust to the $Q>2$ mission and the team has moved on to more detailed design of all of the subsystems.

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