



Overview of Keda Torus eXperiment Initial Results

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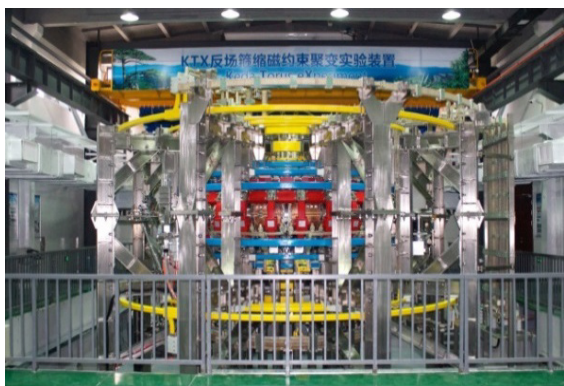


Fig. 1 The picture of KTX

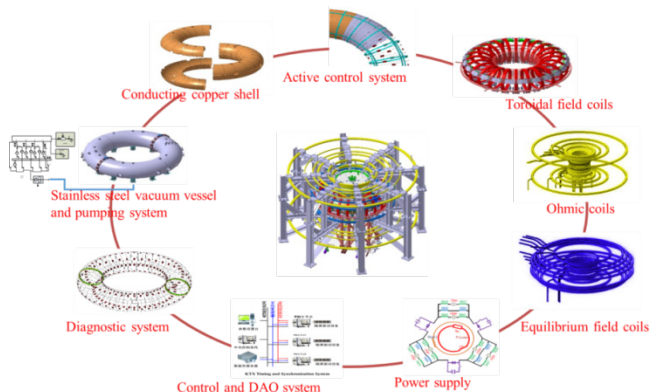


Fig. 2 The system composing of KTX

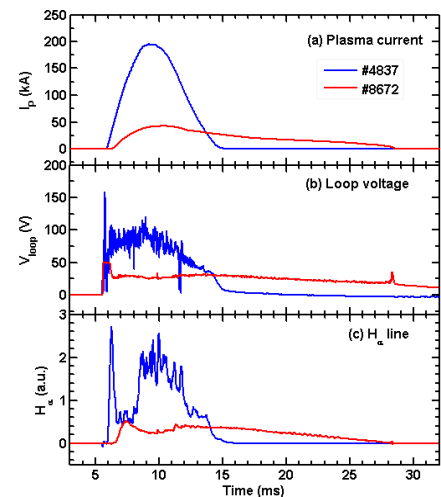


Fig. 3 Operation performance: The maximum 200kA discharge (red line) and 21ms discharge (blue line).

- The Keda Torus eXperiment (KTX) is a new reversed field pinch (RFP) device at the University of Science and Technology of China. The construction and assembly of KTX, including the vacuum chamber, conducting shell, magnetic field windings, power supply system, active control coils, vacuum pump and data acquisition system, have been completed in Aug. 1, 2015.
- In the commissioning, the first plasma was obtained in Aug. 15th, 2015. Intensive conditioning of machine is underway to ramp up plasma current toward full operation.
 - An active feedback mode control system has been built and has been implemented to control the error field around the gaps of the conducting shell.
 - The inductive baking and DC Glow Discharge cleaning are implemented for wall conditioning.
 - The pulsed power supply systems for poloidal field (PF) and toroidal field (TF), using thyristor and energy storage capacitors, have been tested and commissioned. In the first phase of KTX, the current total storage energy is 1.6 MJ for both PF and TF system. The TF power supply can be operated to realize reversed toroidal field configuration and low q tokamak configuration with flexibility.
 - The fundamental electric-magnetic measurements, 2D double-foil soft x-ray array, multi-channel analysis for x-ray, middle plane H α line, fast reciprocating Langmuir probe and one-chord interferometry are currently used in KTX for commissioning. One chord Thomson scattering system has been design.
- KTX is being upgraded to the second phase after completion of the first phase. The capability of power supply and advanced diagnostics will be upgraded for in-deep physics research.
- KTX program will address some important RFP physics like the impact of 3D structure on plasma flow, and magnetic turbulence and plasma wall interaction,