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## Overview of Keda Torus eXperiment

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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. Immediately following that, the first plasma was obtained in Aug. 15<sup>th</sup>, 2015. Intensive conditioning of machine is underway to ramp up plasma current toward full operation. The unique double-C design of KTX vacuum vessel allows easy access to interior of the KTX for first-wall modifications and investigations of power and particle handling, a largely unexplored territory in RFP research leading to demonstration of the fusion potential of the RFP concept. An active feedback mode control system has been built and implemented to control the error field around the gaps of the conducting shell. 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 PF and TF system. The TF power supply can be operated to realize both reversed toroidal field and low q tokamak configuration.

Electric-magnetic measurements, eddy current probe array, 2D double-foil soft x-ray array, multi-channel analysis for x-ray, middle plane Ha line, fast reciprocating Langmuir probe and one-chord Terahertz interferometry are currently used in KTX for commissioning. One chord Thomson scattering system has been design.

Low q tokamak discharges have been conducted with maximum plasma current of 200kA in present conditioning; the longest length of discharge reaches 22ms, which is closed to the limitation of shell penetration time of 20ms, by only using conducting shell stabilization; the typical RFP discharges have been achieved.

KTX is being upgraded to the second phase after completion of the first phase. Meanwhile KTX program

will address some important RFP physics like the impact of 3D structure on plasma flow, and magnetic turbulence and plasma wall interaction, etc.

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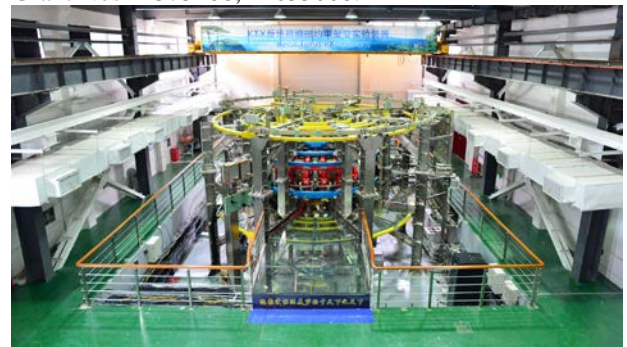


Figure 1 Birdview of KTX device

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