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Initial operation results from KTX

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Keda Torus eXperiment (KTX) is a medium size reversed field pinch (RFP) machine which has been constructed to study active feedback control of MHD modes, electromagnetic turbulences and plasma wall interaction under different magnetic configurations, such as low safety factor (q) tokamak and reversed field pinch. The variation of magnetic topology in the presence of both external and internal magnetic perturbations will impact on plasma performance. The first plasma of KTX was achieved on August 2015 shortly after the completion of the construction, suggesting sound physics and engineering design and proper fabrication and assembly. A low q tokamak and transient Reversed Field Pinch operation modes have been achieved with the same power supply system. For the tokamak mode, the maximum stored energy in the poloidal field reached 1.6MJ, which correspond to a flux swing of about 1Vs. The edge electron density and electron temperature are measured by Langmuir probes. For tokamak discharge, the measured edge electron density can reach 10ˆ19 mˆ-3, and the electron temperature is around 10 eV. Magnetic fluctuations are measured by edge magnetic probes. The coherency spectra show coherent signal around 10kHz with a dominant poloidal mode number m=3. In RFP operation, effort was made to reverse the toroidal field quickly. RFP state on KTX is achieved for a short period of time. The stable RFP state operation mode is now being pursued on KTX.

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Primary author: Prof. LAN, Tao (University of Science and Technology of China)

Co-authors: Prof. LIU, Ahdi (University of Science and Technology of China); Dr LUO, Bing (University of Science and Technology of China); Prof. XIAO, Bingjia (Institute of Plasma Physics, Chinese Academy of Sciences); Prof. XIAO, Chijin (University of Saskatchewan); Dr TU, Cui (University of Science and Technology of China); Dr WANG, Hai (University of Science and Technology of China); Dr ZHOU, Haiyang (University of Science and Technology of China); Prof. LI, Hong (University of Science and Technology of China); Prof. XIE, Jinlin (University of Science and Technology of China); Prof. YANG, Lei (Institute of Plasma Physics, Chinese Academy of Sciences); Dr TAN, Mingsheng (University of Science and Technology of China); Prof. FU, Peng (Institute of Plasma Physics, Chinese Academy of Sciences); Prof. YANG, Qingxi (Institute of Plasma Physics, Chinese Academy of Sciences); Prof. WAN, Shude (University of Science and Technology of China); Prof. LIU, Wandong (University of Science and Technology of China); Dr BAI, Wei (University of Science and Technology of China); Dr DING, Weixing (UCLA); Dr MAO, Wenzhe (University of Science and Technology of China); Prof. WEN, Xiaohui (University of Science and Technology of China); Prof. SONG, Yuntao (Institute of Plasma Physics, Chinese Academy of Sciences)

Presenter: Prof. LAN, Tao (University of Science and Technology of China)

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