Present state and future plan of Fusion Research in China

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Abstract:

After 30 year's research and development, Chinese fusion research starts its new era marked with the successfully operation of the world first fully superconducting tokomak EAST, H-mode experiments in HL-2A tokamak and start ITER-CN Procurement R&D and construction. By combining ITER and domestic fusion program, china will speed-up its plan for mastering the technology for utilization of fusion power plan in future.

EAST started operation in 2006. It has now been upgraded from initial full metal wall to actively cooled graphite plasma facing components (PFC). Stable double null (DN) divertor plasma discharges over 60 seconds have been achieved with the actively cooled graphite PFCs and the new internal divertor cryo-pump. Plasma current up to 600 kA, electron density ~$5x10^{19}m^{-3}$, electron temperature ~2.5keV have been obtained with lower hybrid current drive (LHCD) and ICRF auxiliary heating. Present state and 5 year plan of EAST research including physics and technical program will be presented.

Significant progresses for ITER-CN Procurement have been done in past few years with strong support from Chinese government and industries. The first TF conductor sample and shielding blanket module have been tested which meet ITER requirements. HTc feeder has been successfully tested up to 90kA. TF and PF conductors are under construction. 3-4 PA will be signed in this year.

Progresses on EAST, HL-2A and HT-7 experiments, ITER components R&D and construction and near future plan will be given in this talk.