Abstract Submitted
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Integrated Plasma Control for Alternative Plasma Shape on EAST BINGJIA XIAO[1], Chinese Academy of Sciences — To support long pulse plasma operation in high performance, a set of plasma control algorithms such as PEFIT real-time equilibrium reconstruction, radiation feedback, Beta and loop voltage feedback and quasi-snowflake shape f control have been implemented on EAST Plasma Control system (PCS) which was adapted from DIII-D PCS. PEFIT is a parallelized version of EFIT by using GPU with highest computation acceleration ratio up to 100 with respect to EFIT. It demonstrated high performance both in DIII-D data analysis and in the real-time shape control on EAST plasma either in normal or quasi-snowflake shape. Loop voltage has been successfully controlled by Low Hybrid Wave (LHW) while the plasma current is maintained by poloidal field coil set. Beta control has been also demonstrated by using LHW and it will be extended to other heating sources because the PCS interface is ready. Radiation feedback control has been achieved by Neon seeding by Super-Sonic Molecular Beam Injection (SMBI). For the plasma operation in quasi-snowflake, we have reached 20 s ELMy free high confinement non-inductive discharges with betap ˜2, H98 ˜1.1 and plasma current ˜250 kA.

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