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Overview of TJ-II experiments. KIERAN MCCARTHY, Real Sociedad Espanola de Fisica, LABORATORIO NACIONAL DE FUSION, EURATOM-CIEMAT, MADRID, SPAIN TEAM, IPP, NSC KIPT, KHARKOV, UKRAINE COLLABORATION, INF, KURCHATOV INSTITUTE, MOSCOW, RUSSIA COLLABORATION, GPI, RUSSIAN ACADEMY OF SCIENCES, MOSCOW, RUSSIA COLLABORATION, AF IOFFE PTI, ST. PETERBURG, RUSSIA COLLABORATION — We present an overview of experiments in the TJ-II stellarator. Global confinement studies reveal a positive energy confinement dependence on rotational transform and density together with parametric dependences on wall conditions. Spontaneous and bias-induced improved confinement transitions are seen. Configuration scan experiments show interplay between magnetic structure, transport and electric fields. While DC radial electric fields are comparable with neoclassical estimates, neoclassical/turbulent bifurcation and kinetic effect mechanisms are needed to explain the impact of magnetic topology on flows and radial electric fields. Studies of the influence of magnetic configuration on core and edge instabilities show the role of low-order rationals and of density and heating power thresholds to trigger quasi-coherent modes and ELM-like instabilities. Hydrocarbon fuelling in configurations with a low-order rational value in the rotational transform close to the LCFS shows impurity screening related to the divertor effect.

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