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Contribution to Fusion Research from IAEA Coordinated Research Projects and Joint Experiments

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IAEA Coordinated Research Projects (CRP) on "Utilisation of a Network of Small Magnetic Confinement Fusion Devices for Mainstream Fusion Research"and "Conceptual development of steady-state compact fusion neutron sources"continue to contribute to the mainstream Fusion Research. These CRPs join participants from 18 IAEA member states, who perform experiments and present results of individual and coordinated research and results of IAEA Joint Experiments (JE) at Research Coordinating Meetings, International Conferences and in publications. These activities also create platform for building long term relationships between scientists from developing and developed countries in fusion science and technology.

The objective of the CRP "Conceptual development of steady-state compact fusion neutron sources"(CFNS) is to support the research on the development of steady-state compact fusion neutron sources for scientific, technological and nuclear energy applications. This research provides concepts and conceptual designs for low and high power CFNS; determines operational domains with optimized plasma performance and aimed on the development of a scientific and technological basis and comprehensive safety analysis for the proposed CFNS.

The objective of the CRP "Utilization of a Network of Small Magnetic Confinement Fusion Devices for Mainstream Fusion Research"is to streamline results of studies on small fusion devices to mainstream fusion research by establishing a network of cooperation enabling coordinated investigations relevant to physics, diagnostics and technology issues of next fusion devices such as ITER and DEMO. 6 IAEA JEs have been carried out. In the recent JEs, studies have been extended from characterization of plasma turbulence and correlation between the occurrence of transport barriers, improved confinement with electrostatic turbulence, to characterization of the plasma pedestal in ohmic and NB heated H-mode discharges, NBI-induced Alfven Eigenmodes, studies of microwave emission, relation between halo currents and Ip 3D asymmetries during disruptions, evaluation of parallel electron power flux density using Langmuir and Ball-pen probes, RF preionisation and investigation of the use of high-temperature superconductors in tokamak magnets.

Outputs of these activities will be overviewed and results of the recent JEs will be presented in detail.

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