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EX/P3-29: Experiments on GOL-3 Multiple Mirror Trap for Fusion Program

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The GOL-3 Multiple Mirror Trap is an 11-m-long solenoid with axially-periodical (corrugated) magnetic field. In the basic operation regime the solenoid consists of 52 magnetic corrugation cells with $B_{\max}/B_{\min}=4.8/3.2$ T. Deuterium plasma of $10^{20}\div 10^{22}$ m⁻³ density is heated up to ~ 2 keV ion temperatures (at $\sim 10^{21}$ m⁻³ density and confinement time ~ 1 ms) by a high power relativistic electron beam. Main conclusion from data is that plasma heating and confinement in the multiple mirror traps are of essentially turbulent nature. In general, achieved plasma parameters support our vision of a multiple mirror trap as the alternative path to a fusion reactor with $\beta\sim 1$ and $10^{21}\div 10^{22}$ m⁻³ plasma density. Project of a new linear trap with multiple mirror plugs is in progress in Novosibirsk BINP. Several new experiments in support of the fusion program based on linear machines are presented. . An intense electron beam source of a new type, based on a gaseous arc plasma emitter, was developed and first experiments with this beam are carried out; the new data on plasma rotation and electromagnetic radiation in the GOL-3 will be presented.

Country or International Organization of Primary Author

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Collaboration (if applicable, e.g., International Tokamak Physics Activities)

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