

## P4.1063 Start plasma production in GOL-NB multiple-mirror trap

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See full abstract here

<http://ocs.ciemat.es/EPS2019ABS/pdf/P4.1063.pdf>

The GOL-NB project is a physics demonstration experiment on multiple-mirror plasma confinement that is currently under development in the Budker Institute of Nuclear Physics [1]. The final configuration of the device will include a 2.5-m-long central gasdynamic trap with two attached multiple-mirror sections of 3 m each, and two end magnetic flux expanders that house a start plasma creation system, plasma receiver endplates and a system of biased electrodes for plasma stabilization. Plasma will be heated by two 0.75 MW, 25 keV neutral beams. GOL-NB will be a scaled-down physical model of a future fusion-grade open trap [2]. Currently, the start configuration of GOL-NB is assembled [3]. It includes both expander tanks, an arc source of start cold plasma, a multiple-mirror solenoid with 34 coils of 4 m length, and a short temporary section for the on-site commissioning of NBIs. Experiments demonstrated that the plasma stream with  $\sim 1020 \text{ m}^{-3}$  density was successfully generated, compressed in the increasing magnetic field and transported through the full length of the solenoid. These processes imitate the initial filling of the central trap of GOL-NB with the start cold plasma. Parameters and properties of plasma in this first experimental campaign are discussed.

[1] V.V. Postupaev, et al., Nuclear Fusion, 57, 036012 (2017). [2] P.A. Bagryansky, A.D. Beklemishev, V.V. Postupaev, J. Fusion Energy, 38, 162 (2019). [3] V.V. Postupaev, et al., Proc. EPS-2018 (Prague, 2018), paper P1.1035.

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