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EX/8-3: From Globus-M Results Toward Compact Spherical Tokamak with Enhanced Parameters, Globus-M2

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The spherical tokamak Globus-M has largely reached its projected parameters. Some of the deficiencies, which do not allow to cross the present operational range have been identified. The experimental basis and the recognition of the reasons for limitations form the basis for the parameter definition of the next step, Globus M2. In this paper we report on the major findings on Globus-M including recent results and we present the design parameters of Globus-M2.
The summary of the main results obtained on Globus-M with neutral beam auxiliary heating and ion cyclotron heating is presented. The transport analysis of both L and H-mode and ITB discharges together with investigation of fast ion behavior in Globus-M created the basement for predictive numerical simulations in the conditions of magnetic field and plasma current increasing to 1T and 0.5 MA correspondingly. The plasma column dimensions remain unchanged in the new machine named Globus-M2. The results show that at the density of ˜10ˆ20 mˆ-3 plasma in Globus-M2 is heated up to the temperature of over 1 keV range and the energy stored in plasma is 3-5 times over the achieved level. The prospects on RF plasma heating and quasistationary noninductive current drive by means of ion cyclotron range waves and lower hybrid waves as well as the data of numerical simulations are discussed.

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