

Tokamak GOLEM for fusion education - chapter 6.

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The tokamak GOLEM is the oldest tokamak still in operation. Its current objective is to train future thermonuclear fusion specialists the basics of tokamak physics and technology by means of operating the *understandable* tokamak. The unique full remote control ability to setup the necessary technological parameters of the tokamak operation, carry out the discharge and study instantly the results predestine the device for its exploitation in the frame of various foreign fusion education activities.

Students of the Czech Technical University in Prague participate on the development of the tokamak operation and its diagnostics base and are involved in the simple projects contributing to the main stream of the tokamak plasma physics and technology. i) A plasma interferometer undergoes reparation, upgrade and re-installation. First density measurements have been conducted to test its function. ii) A real-time plasma positioning system in the vertical direction have been implemented operating in two modes: pre-programmed control of horizontal magnetic field scenario and LabVIEW based real-time system, which controls the horizontal magnetic field in response to the currently measured vertical position of plasma. iii) The investigation of the runaway electrons behavior in the GOLEM tokamak has continued. The utilization of timepix detector for direct in-vessel measurements of runaway electron properties has begun and first measurements have been conducted. Furthermore, comparison isotopic studies of RE production in helium and hydrogen plasmas were performed. iv) VA characteristics of the Langmuir probe measured on the shot-to-shot basis have been conducted in the various regimes and types of plasma in the tokamak GOLEM demonstrating the basic plasma physics phenomena with the unique temporal resolution.

References

- [1] Svoboda V., et al., Multi-mode Remote Participation on the GOLEM Tokamak. *Fusion Engineering and Design*, 86(6-8):1310–1314, 2011.