Contribution ID: **3381** Type: **not specified**

P4.1004 System of high-speed video and infrared cameras for joint control of the lithium limiters behavior on tokamak T-11M. First results

Thursday, 11 July 2019 14:00 (2 hours)

See full abstract here
http://ocs.ciemat.es/EPS2019ABS/pdf/P4.1004.pdf

Lithium is the most promising liquid metal, considered as potential for plasma-facing elements. It was experimentally shown, that the use of lithium in tokamaks increases plasma confinement time, decreases the amount of impurities in the plasma, and decreases hydrogen recycling on the plasma facing components. Experiments on the tokamak T-11M are devoted to the development of a closed-loop lithium circulation system. Within the framework of this program, it is necessary to investigate the thermal loads goes to the plasma facing components of vacuum chamber, in particular, the longitudinal limiters - collectors of lithium. The T-11M tokamak is equipped with two high-speed cameras Baumer HXG20C operating in the visible range. It allows to record processes on two limiters or to take pictures of one limiter from two angles during the tokamak pulse. There are various light filters used in experiments: LiI (671 nm.), LiII (549 nm) and H (656 nm). Also, the T-11M diagnostics is equipped with two infrared camera Infratec VarioCam HD Head 680 and Infratec VarioCam HD Head 880, operating in the wavelength range of 7.5 - 14 microns. The launch of all cameras is synchronized. The observation of two longitudinal collectors in tokamak T-11M is carried out simultaneously in the visible and IR wavelength ranges. Cameras operating in the infrared range are used for recording the temperature distribution on the surface of lithium collectors. This allow to determine the distribution of heat load on the collectors surfaces. The work carried out at NRNU MEPhI to determine the temperature dependence of the lithium and CPS with lithium emissivity (grayness coefficient) made it possible to increase the accuracy of the data obtained from IR cameras. Currently, on the T-11M tokamak experiments are being carried out to determine the thermal loads on the surface of lithium limiters during the discharge process, depending on their temperature and position relative to the plasma.

Presenter: PRISHVITCYN, A.S. (EPS 2019)

Session Classification: Poster P4

Track Classification: MCF