ABSTRACT

During the early campaigns of the KSTAR project, feedback control of plasma density has been successfully commissioned at the very first attempt by using a transfer function analysis. A stable and robust discharge was shown for a peak output of 500 kW at 1.8 T of 4 torr steady-averaged limit. Plasmas with feedback control, pre-programmed fueling modulation was carried out by pulldown the divertor gas. Like-averaged plasma density was monitored in real-time by 200 kHz interferometer systems from the line-averaged density (n_e) and the radial density profile (n_e(r)). From these interferometer systems, several transfer functions such as rising time, settling time, and overshoot ratio were obtained. It was found that this has little effect on response characteristics, while the transfer function is mainly determined by the density feedback control. The transfer function analysis, several transient responses such as rising time, setting time and overshoot ratio were observed in a certain range by the measured sensors (n_e) and i_e. It is found that this has little effect on response characteristics, while the transfer function is mainly determined by the density feedback control. The transfer function analysis, several transient responses such as rising time, setting time and overshoot ratio were obtained in a certain range by the measured sensors (n_e) and i_e. It is found that this has little effect on response characteristics, while the transfer function is mainly determined by the density feedback control. This work was supported by Korean Ministry of Science and ICT under the KSTAR Project Contract.

2. Beginning with Gas Fueling Modulation to Use a Simplified Solitary Model of Particle Balance

The first density feedback control experiment was fulfilled in the early phase of the KSTAR experiment. The campaign was carried out in 2010 to adjust the neutral line temperature to obtain essential parameters of the simple global particle balance model. The closure of density feedback control was automatically switched on after the plasma ignition. The campaign was repeated with the maximum available gas injection of 2.8 Torr at the neutral line temperature to obtain essential parameters of the simple global particle balance model. The closure of density feedback control was automatically switched on after the plasma ignition. The campaign was repeated with the maximum available gas injection of 2.8 Torr at the neutral line temperature. The campaign was repeated with the maximum available gas injection of 2.8 Torr at the neutral line temperature. The campaign was repeated with the maximum available gas injection of 2.8 Torr at the neutral line temperature.