

Imaging of SST-1 plasma with LHCD power

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Plasma imaging is an essential diagnostics system for any tokamak as it can provide vital information on various plasma parameters. These systems are ones of the first diagnostics installed and are basic not only at start-up stage but also in subsequent operations. Imaging system generally consists of at least two cameras, one of them is a high speed camera and another one is slow speed camera. The first one provides study of fast processes in plasma and plasma-wall interaction. The second camera ensures video image for general plasma operation monitoring. Generally, imaging systems make it possible to plasma monitoring, plasma formation and start-up: break down and ramp-up, study and observation of the magnetohydrodynamic (MHD) instability-edge localized modes (ELMS), multifaceted, asymmetric radiation from the edge (MARFE), displacements study dust migration and deposition study, plasma wall interaction, plasma position control.

A Tangential viewing optical imaging system is installed on SST-1. Plasma images are transferred through coherent optical imaging fibre and coupled to the CCD camera placed outside the SST1 machine. The CCD camera used with this system operates at 30 frames/sec to acquire plasma images. The data from the CCD camera is transferred through gigabit Ethernet cable to acquisition PC placed in diagnostics Lab. The whole system is fully automated for operation and data acquisition of the imaging data.

In this paper we are presenting observations during LHCD power launching in the SST1 machine. The LHCD pulse was launched into the plasma at various instant of time and varying in pulse length. Plasma images exhibit change in distribution of visible radiation during the interaction of LHCD with the plasma. This increase in emission may be attributed to the enhance in plasma wall interaction as the plasma moves outwards which results in increase of plasma wall interaction. Decrease in plasma size is also observed during interaction of LHCD pulse with plasma.

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