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## P3.065 A visible light high-speed imaging system and tomographic reconstruction of plasma emissivity in J-TEXT

*Wednesday, 19 September 2018 11:00 (2 hours)*

Visible light high-speed imaging systems (VLHIS) are widely used in imaging and diagnosing plasmas in tokamak, e.g., plasma boundary position, structures, fast fluctuations, for its visibility and easy operation. To monitor the discharge process on J-TEXT tokamak in a high temporal resolution and study of the visible light emissivity distribution, the plasma boundary shape, a new VLHIS has been constructed. The new VLHIS has a higher frame rate (up to 12000fps/s) than the old one, and the aperture on it can be changed to solve the problem of low incoming light caused by short exposure time when increasing the camera's frame rate. It has two working modes with the field of view (FOV) constant, one is for high frame rate, low resolution and another one is for high resolution, low frame rate. For the line-integrated camera images, a tangential image tomographic reconstruction technique based on camera calibration, ray tracing and solving an overdetermined set of equations is applied to compute the visible light emissivity profile of the poloidal cross section. Preliminary results about the time-averaged reconstructed plasma emissivity profile have obtained to estimate the plasma boundary shape and compared with CIII, CV radiation distribution measured by spectrograph.

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