

Abstract Submitted
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Development of the Visible Light Tomography Diagnostics for UTST Spherical Tokamak Plasmas QINGHONG CAO, SHUJI KAMIO, NAOTO SUZUKI, KOICHIRO TAKEMURA, HIROTOMO ITAGAKI, TAKENORI WATANABE, KOTARO YAMASAKI, The University of Tokyo, KOJI ISHIGUCHI, The Open University of Tokyo, TAKUMA YAMADA, MICHIAKI INOMOTO, YASUSHI ONO, The University of Tokyo — The University of Tokyo Spherical Tokamak (UTST) device was designed to form an ultra-high β plasma. Since the most dangerous mode for the high β ST is the ballooning mode, the visible light computed tomography (CT) has been developed to measure the plasma emission profile of the toroidal cross-section of the ST plasma. We developed a tomographic reconstruction algorithm for an annular toroidal cross-section of plasma ($z=0$) by using modified Fourier-Bessel expansion method. The visible light emissivity, $g(r,?)$ was expanded into the Fourier series in azimuthal direction and a combination of Bessel functions and Neumann functions in radial direction, for the purpose of satisfying the annular boundary condition. Spatial distribution of HeII(656.0nm) light was reconstructed by using the proposed algorithm in the case of center solenoid coil (CS) and also in the case of poloidal field coils (PF) discharge.

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