

Fast-ion D α spectroscopy diagnostics in KSTAR

Wednesday, 4 September 2019 15:15 (15 minutes)

Fast-ion D α (FIDA) diagnostics has been widely employed to investigate fast-ion characteristics in many fusion devices. In KSTAR FIDA diagnostic system has been developed and the commissioning has been performed since 2018 KSTAR experimental campaign. The system consists of the grism, two tele-lens sets, blocking strip and EMCCD. A narrow neutral density filter (transmittance < 0.1%) strip was utilized for blocking the main D α emission peak in order to increase signal-to-noise ratio of the peripheral emission intensity. The temporal, spectral and spatial resolutions of the spectrometer are 20 msec, 0.0215 nm and 4-10 cm respectively. Presently, there is only active view which is blue-shifted from the main D α line (656.1 nm). The weight functions of FIDA view have been calculated with geometric information of KSTAR neutral beam and FIDA line of sights for evaluating the diagnostic coverage and sensitivity of the fast-ion phase-space. FIDASIM calculations have been commissioning with KSTAR spectrometer data to precisely evaluate FIDA signal.

Country or International Organization

Korea, Republic of

Primary authors: YOO, Jeongwon (National Fusion Research Institute); KIM, Junghee (National Fusion Research Institute); LEE, Jongha (National Fusion Research Institute); Dr NAM, Yong Un (National Fusion Research Institute); Prof. OH, Soogi (Ajou University); KANG, Jisung (National Fusion Research Institute); Mr LEE, Myungwon (National Fusion Research Institute); KO, Won Ha (Korea, Republic of); Dr JUNG, Laurent (National Fusion Research Institute); Dr PARK, Byoung-Ho (National Fusion Research Institute)

Presenter: YOO, Jeongwon (National Fusion Research Institute)

Session Classification: Poster

Track Classification: Diagnostics for Energetic Particles