Contribution ID : **319** Type : **not specified**

8.20 Two-dimensional radiation profiles during krypton seeding experiments with an infrared imaging video bolometer (IRVB) in KSTAR

Tuesday, 17 April 2018 16:01 (120)

Plasma radiation is a crucial parameter for particle and energy transport study in fusion plasmas. Infrared imaging video bolometers (IRVB) can provide radiation profiles of fusion plasmas with noise stability, flat sensitivity and wide viewing range. Since the raw data of IRVB is the sum of local emissivity along the line of sight, tomographic reconstruction for removing line-integration effect is necessary to obtain 2-D cross-sectional radiation profiles. In this study, two-dimensional reconstruction algorithm for KSTAR IRVB was developed using the Phillips-Tikhonov (P-T) method. The reliability of the tomography code was validated by phantom reconstruction tests with various synthetic images. The reconstruction accuracy at divertor was distinctly improved with reduction of IRVB aperture size. In 2017 KSTAR campaign, krypton (Kr) seeding was performed in H-mode plasmas for mitigation or suppression of ELM. The IRVB tomography clearly shows the time evolution of 2-D radiation images after Kr injection. Total radiation power shows that a significant amount of plasma energy is dissipated by Kr radiation. At sufficiently high level of Kr, long-lasting ELM suppression until the end of plasma was also achieved.

Primary author(s) : JANG, Juhyeok (Korea Advanced Institute of Science and Technology (KAIST))

Co-author(s) : CHOE, Wonho (Korea Advanced Institute of Science and Technology (KAIST)); PETERSON, Byron Jay (National Institute of Fusion Science (NIFS)); OH, Seungtae (National Fusion Research Institute (NFRI)); MUKAI, Kiyofumi (National Institute of Fusion Science (NIFS)); HONG, Suk-ho (National Institute of Fusion Science (NIFS)); JAE SUN, Park (Korea Advanced Institute of Science and Technology (KAIST)); SONG, Inwoo (Korea Advanced Institute of Science and Technology (KAIST)); JEON, Taemin (Korea Advanced Institute of Science and Technology (KAIST))

Presenter(s) : JANG, Juhyeok (Korea Advanced Institute of Science and Technology (KAIST)); CHOE, Wonho (Korea Advanced Institute of Science and Technology (KAIST)); PETERSON, Byron Jay (National Institute of Fusion Science (NIFS)); OH, Seungtae (National Fusion Research Institute (NFRI)); MUKAI, Kiyofumi (National Institute of Fusion Science (NIFS)); HONG, Suk-ho (National Institute of Fusion Science (NIFS)); JAE SUN, Park (Korea Advanced Institute of Science and Technology (KAIST)); SONG, Inwoo (Korea Advanced Institute of Science and Technology (KAIST)); JEON, Taemin (Korea Advanced Institute of Science and Technology (KAIST))

Session Classification : Session #8, Tuesday Afternoon Poster Session