

Abstract Submitted  
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**Analysis of Al and Fe transport coefficients in LHD core plasmas based on space-resolved EUV spectroscopy** XIANLI HUANG, SHIGERU MORITA, TETSUTAROU OISHI, IZUMI MURAKAMI, MOTOSHI GOTO, National Institute for Fusion Science, HONGMING ZHANG, YANG LIU, The Graduate University for Advanced Studies — With impurity pellet injection and a one-dimensional transport code, the transport of Al and Fe ions has been analyzed in the Large Helical Device (LHD) based on extreme ultraviolet (EUV) space-resolved spectroscopy. The total density of Fe ions in the plasma core has been analyzed from the radial profiles of the Fe  $n=3-2 L_{\alpha}$  emissions. When the  $n_e$  profile is peaked or hollow, the Fe density also exhibits a peaked or hollow profile, respectively. Fe transport analysis shows that the convective velocity ( $V$ ) is outward in the plasma core and inward near the edge when the  $n_e$  profile is hollow. On the other hand, the  $V$  takes negative value over the whole radial range in the peaked  $n_e$  profile. Therefore, the different Fe density profiles between peaked and hollow  $n_e$  profiles can be explained by the significant difference in the  $V$  profile. Comparison of the transport coefficients between Al and Fe shows the magnitude of  $V$  for Al ions seems to be smaller than that for Fe ions while the difference in the diffusion coefficient profile is not significant. The difference in the decay time of line emissions between the two species is attributed to the weaker convection for the Al.

Xianli Huang  
National Institute for Fusion Science

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