

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Soft-X ray imaging diagnostics of helical structures in the low-aspect-ratio RFP RELAX¹ TAKUMI ONCHI, University of Saskatchewan, KENSUKE OKI, AKIO SANPEI, HARUHIKO HIMURA, SADA O MASAMUNE, Kyoto Institute of Technology, RYUYA IKEZOE, University of Tsukuba, NOBUHIRO NISHINO, Hiroshima University, HARUHISA KOGUCHI, National Institute of Advanced Industrial Science and Technology — Soft-X ray (SXR) imaging diagnostic techniques using tangential pinhole camera have been developed and applied to the RELAX ($R/a=0.5\text{m}/0.25\text{m}$, $A=2$) for the study of three-dimensional (3-D) magnetic structures in a low-aspect-ratio RFP configuration. An experimental 2-D image has been compared with calculated tangential images using model profiles for emissivity, to identify the most plausible SXR emissivity profile for the experimental 2-D image. It has been found that in shallow-reversal RFP plasmas with relatively high fill pressure, a helically deformed core has been formed in RELAX. The SXR emissivity in the helical core is estimated to be 2-3 times higher than in the background. According to time variation measured by AXUV array, the SXR emissivity is the highest in the core region with quasi-periodic oscillation of the peak position, which is an indication of toroidal rotation of the helical hot core.

¹This work was supported by KAKENHI 08J10258.

Takumi Onchi
University of Saskatchewan

Date submitted: 26 Jul 2010

Electronic form version 1.4