
Contribution ID: **252** Type: **Poster**

# Performance analysis on the VUV imaging system in EAST tokamak

*Tuesday 6 June 2017 13:40 (2 hours)*

Performance analysis on the VUV imaging system in EAST tokamak
Z.J.Wang1, 2, T.F.Ming1, X.Gao1, 2, Y.M.Wang1, F.Zhou1, 2, F.F.Long1, 2 and EAST Team
1Institute of Plasma Physics, Chinese Academic Sciences, Hefei, China
2Science Island Branch of Graduate School, University of Science and Technology of China, Hefei, China
*tfming@ipp.ac.cn

In the present fusion research, magnetically confined Tokamak device is one of the most promising candidates for future commercial fusion reactor. The Experimental Advanced Superconducting Tokamak (EAST), the first fully superconducting tokamak with D-shaped poloidal cross-section, can be operated under similar configurations with ITER. It aims at high-performance plasma for long-pulse operation scenarios under actively cooled metal wall condition. During the past few years, a lot of significant progress and advances in both physics and technology has been made on EAST tokomak [1]. Additionally, studies on EAST will play an important role on both basic physics and key technologies for the Chinese Fusion Engineering Test Reactor (CFETR) as well.
A tangentially viewing vacuum ultraviolet (VUV) high-speed imaging system, based on an inverse Schwarzschild-type optic system is developing to measure the edge plasma emission (including the pedestal region) in EAST. The telescope system consists of two multilayer mirrors: a convex mirror and a concave mirror. The mirrors are made of layers of molybdenum and silicon, which can selectively reflect 13.5nm ($\Delta\lambda \sim 1$ nm) vuv light [2]. With this diagnostic, two dimensional (2D) structures of the edge magnetohydrodynamic (MHD) instabilities can be evaluated, which may be helpful on the physical understandings. In this work, the performance of this imaging system is discussed, including the image quality, estimation of spatial resolutions and noise levels, etc.

Acknowledgments
This work is supported by the Natural Science Foundation of China under Contract No. 11605244 and the National Magnetic Confinement Fusion Science Program of China under Contract No. 2014GB106000, 2014GB106001 and 2013GB106000.

References:
[1] Y.X.Wan.et al 2016 26th IAEA Fusion Energy Conference, Kyoto, 17-22 Oct. 2016, Paper No. OV/3-4
[2] T.F. Ming et al. Plasma and Fusion Research, Vol 6, 2406120 (2011)

## Eligible for student paper award?

No

**Author:** Ms WANG, Zhijun

**Co-authors:** Dr MING, Tingfeng; Prof. GAO, Xiang; Dr WANG, Yuming; Mr ZHOU, Fan; Ms LONG, Feifei

**Presenter:** Ms WANG, Zhijun

**Session Classification:** T.POS: Poster Session T

**Track Classification:** Diagnostics and instrumentation