Contribution ID : **395**   Type : **not specified**

6.16 Design of Langmuir probe diagnostic system for the upgraded lower tungsten divertor in EAST tokamak

Tuesday, 17 April 2018 10:31 (120)

In order to achieve long-pulse H-mode plasma scenario over 400s with high heating power in the Experimental Advanced Superconducting Tokamak (EAST) device, the lower graphite divertor will be upgraded into tungsten (W) divertor with active water cooling, which consists of the W monoblocks as divertor targets and the flat-type W/Cu plasma facing components (PFCs) as the divertor dome and baffles. As a typical diagnostic tool, the divertor Langmuir probe (DivLP) diagnostic system will also be upgraded accordingly. This paper presents the design of two kinds of newly DivLP systems, which are planned to be utilized on the W monoblock assembly parts and the flat-type W/Cu assembly parts for the lower tungsten divertor, respectively, in terms of their structures and preliminary toroidal and poloidal layouts. The DivLP system can measure the steady-state and transient plasma parameters with the schemes of triple-probe, double-probe and single-probe, to obtain the spatial and temporal distribution of plasma on the divertor PFCs, which is useful for the discharge controlling and operation in EAST. In addition, the thermal finite element analysis of the two kinds of probes is also carried out by using three-dimensional (3D) finite element code ANSYS, which aimed to get the optimal designs.

Primary author(s) :   XU, Jichan (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP))

Co-author(s) :   WANG, Liang (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); XU, Guosheng (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); XIE, Hai (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); FENG, Wei (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP); 2.University of Science and Technology of China(USTC)); LIU, Jianbin (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); DENG, Guozhong (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP); 2.University of Science and Technology of China(USTC)); YAO, Damao (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); LUO, Guangnan (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); GUO, Houyang (Institute of Plasma Physics, Chinese Academy of Sciences; General Atomics, PO Box 85608, San Diego, CA 92186, USA)

Presenter(s) :   XU, Jichan (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); WANG, Liang (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); XU, Guosheng (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); XIE, Hai (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); FENG, Wei (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP); 2.University of Science and Technology of China(USTC)); LIU, Jianbin (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); DENG, Guozhong (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP); 2.University of Science and Technology of China(USTC)); YAO, Damao (Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); LUO, Guangnan

(Institute of Plasma Physics, Chinese Academy of Sciences(ASIPP)); GUO, Houyang (Institute of Plasma Physics, Chinese Academy of Sciences; General Atomics, PO Box 85608, San Diego, CA 92186, USA)

Session Classification :   Session #6, Tuesday Morning Poster Session