Optical path upgrade of the terahertz multi-channel polarization interferometer on KTX

Wenzhe Mao[1*], Weixing Ding[1,3], Jinlin Xie[1], Haiqing Liu[2], Yinan Zhou[1], Chu Zhou[1], A.D Liu[1], Tao Lan[1], Ge Zhuang[1]

[1] School of Nuclear Science and Technology, University of Science and Technology of China, Hefei 230026, People's Republic of China
[2] Institute of Plasma Physics, Chinese Academy of Sciences, Hefei 230031, People's Republic of China
[3] University of California Los Angeles, Los Angeles, California 90095, United States of America

maozhe@ustc.edu.cn

KTX （Keda Torus eXperiment）is a medium-sized reversed field pinch (RFP) magnetic confinement fusion experimental device located at the University of Science and Technology of China. A terahertz multi-channel interferometer based on solid-state microwave sources has been developed for this device, achieving a compact design with full system integration on a single optical table. To meet the stricter optical alignment requirements and channel expansion demands of the polarimeter, the optical path has been re-optimized by separating the main optical path of the wave source from the beam-splitting optical path, while integrating polarization interference functions based on three-wave method. With the newly upgraded polarized-interferometer, simultaneous measurements of plasma density and magnetic field in the core area will be implemented on KTX.