

## Multi-channel far-infrared HL-2A interferometer-polarimeter<sup>a)</sup>

Y. Zhou,<sup>b)</sup> Z. C. Deng, Y. G. Li, and J. Yi

*Southwestern Institute of Physics, P.O. Box 432, Chengdu, Sichuan 610041, China*

(Presented 10 May 2012; received 7 May 2012; accepted 9 July 2012; published online 30 July 2012)

An HL-2A interferometer is upgraded to a multi-channel interferometer/polarimeter, which includes four chords for the interferometer and four chords for the polarimeter. The far-infrared lasers (at  $\lambda = 432.5 \mu\text{m}$  and 30 mW power) are used to probe plasmas horizontally in the midplane of HL-2A. A conventional heterodyne technique is used for the interferometer. Two counter-rotating circularly polarized waves are used to measure the Faraday rotation effect. A fast-phase comparator with temporal resolution of 1  $\mu\text{s}$  and phase resolution  $0.1^\circ$  is developed. Further, the distortion of the polarization caused by the beam-splitters and the other optical components is also investigated.

© 2012 American Institute of Physics. [<http://dx.doi.org/10.1063/1.4739226>]