

Abstract Submitted
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Development of a processing and visualization software suite, and optical hardware for the fast infrared diagnostic on NSTX¹ MARK BENJAMIN, West Windsor-Plainsboro High School South, ADAM MCLEAN, RAJESH MAINGI, Oak Ridge National Laboratory, OAK RIDGE NATIONAL LABORATORY COLLABORATION, NATIONAL SPHERICAL TOKAMAK EXPERIMENT TEAM — Infrared (IR) video is regularly captured at a rate of up to 1.6 kHz during plasma discharges in the National Spherical Torus Experiment (NSTX). Analysis of data collected by this diagnostic is complicated by the recent enhancement to dual-band infrared operation, in which both bands are projected side-by-side on the IR detector. In this work, a suite of IDL and JAVA-based processing and visualization tools have been developed to implement automatic image recognition, incorporate temperature and heat flux calibration, and present key video features essential for study of plasma interaction with the NSTX divertor. In addition, design and development work has been carried out for a broadband, low-aberration optical relay for the fast IR camera to make it possible to move the camera outside of the high magnetic field of the machine where electromagnetic interference sometimes leads to unreliable operation.

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