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10.48 On the System Stability and Calibration of the Imaging Plate/Scanner System for Plasma Diagnosis at the National Ignition Facility

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At the National Ignition Facility, storage phosphor imaging plates (IP) are used extensively for recording x-rays, charged particles and neutrons. For x-ray imaging and spectroscopy, absolute and relative calibrations are important for extracting plasma information from the diagnostics. We use Fuji MS SR and TR image plates that have been cut to fit custom diagnostic envelopes. The image plates are scanned on a General Electric FLA 7000 IP flying spot image plate scanner. Calibrations for sensitivity, spatial scale and for temperature dependent fade are applied. During a set of recent calibrations, we noticed large shifts in the absolute calibration of the image plate system. The possible source of these shifts is discussed. We discuss the fade and temperature effects of the image plates and how this correction is applied within the NIF environment. We also compare our NIF FLA 7000 IP scanner with a new GE Amersham Typhoon IP scanner. In addition, the stability of the scanners and the procedural method for calibrations and workflow are discussed. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344, LLNL-ABS-744429.

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