

Abstract Submitted
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Digital Holography for Plasma Facing Component (PFC) Erosion Measurement¹ C.E. (TOMMY) THOMAS JR., Third Dimension Technologies LLC, T.M. BIEWER, L.R. BAYLOR, S.K. COMBS, S.J. MEITNER, D.L. HILLIS, ORNL, E.M. GRANSTEDT, Tri-Alpha Energy, R. MAJESKI, R. KAITA, PPPL — One of the more serious engineering problems facing magnetic fusion energy reactors is the plasma/first-wall or plasma/divertor interface. Hot particles striking these PFC's could easily force replacement in less than a year. In-situ quantitative real-time erosion diagnostics to help understand the erosion process are not currently available. Single wavelength Digital Holography (DH) has been developed to a considerable level of sophistication and dual-wavelength (synthetic wavelength) DH has the potential to be a reliable vibration-resistant erosion diagnostic. Ambiguity free measurements at kHz rates of up to 1 cm of erosion with ~ 1 micron resolution into the PFC and diffraction limited resolution transverse to the PFC are possible. Development of DH as an in-situ real-time PFC erosion diagnostic will be discussed and example data from single-wavelength DH will be presented.

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