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Preliminary Design of a Digital Holography PFC Erosion Diagnostic for MPEX[1] C.E. (TOMMY) THOMAS JR., Third Dimension Technologies LLC, T.M. BIEWER, G.C. SHAW, L.R. BAYLOR, S.K. COMBS, S.J. MEITNER, J. RAPP, D.L. HILLIS, Oak Ridge National Laboratory, E.M. GRANSTEDT, Tri-Alpha Energy Inc., R. MAJESKI, R. KAITA, Princeton Plasma Physics Laboratory
— Preliminary design of a Digital Holography (DH) in-situ Plasma Facing Component (PFC) erosion diagnostic to be used on the proto-MPEX/MPEX experiment is presented. Design trade-offs are discussed including the selection of CO2 laser frequencies and whether/where to use reflective or refractive optical components. The costs and benefits of using a high-speed (expensive) infrared (IR) camera or a lower speed (inexpensive) IR camera, and whether to use simultaneous or sequential acquisition of DH exposures for the dual wavelength system are also described. Expected layout, resolution, and noise figures will be discussed, along with resolution and noise data from previous work at ORNL and PPPL.

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