Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Effects of Vibration on Dual-Laser Digital Holography for In-Situ PFC Surface Characterization[1] C. E. THOMAS, Third Dimension Technologies LLC, Knoxville, Tennessee, USA, C.D. SMITH, The University of Tennessee, Knoxville, Tennessee, USA, T.E. GEBHART, Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA, A.D. GREENHALGH, E.G. LINDQUIST, The University of Tennessee, Knoxville, Tennessee, USA, X. REN, Beloit College, Beloit, WI 53511, USA, T.M. BIEWER, Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA
— The ability to make real-time in-situ measurements of surface changes of Plasma Facing Components (PFCs) in magnetic fusion devices would be a considerable advantage to fusion researchers. A digital holography device is under development at Oak Ridge National Laboratory for in-situ surface characterization of PFCs. A brief review of single laser and dual laser techniques, along with measurements of targets with known surface variations, will be presented. Additionally, ex situ measurements of targets exposed in the Proto-MPEX linear plasma device, and also an initial target exposed to a high power Electro-Thermal arc plasma device, will be shown. The relative vibration of the diagnostic table and the plasma target plays a large role in determining the measurement resolution of the technique, as the diagnostic system transitions from ex situ to in situ characterization of PFCs during plasma exposure.

[1]This work supported by UT-Battelle, LLC under US. D.O.E. contract DE-AC05-00OR22725.

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Date submitted: 03 Jul 2019 Electronic form version 1.4