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Digital Holography Density Diagnostic for ITER Disruption Mitigation Test Stand[1] C.E. THOMAS JR., Third Dimension Technologies, L.R. BAYLOR, S.K. COMBS, Oak Ridge National Laboratory — Digital Holography holds the promise of providing very fast high-resolution density data at a relatively inexpensive price. A proof-of-principle system to demonstrate feasibility of the diagnostic is being designed and built on the ITER Disruption Mitigation Test Stand at ORNL. Although holographic interferometry has long been used as a density diagnostic, this will be the first application of digital holography to this task. While risky due to its unproven nature, digital holography offers the opportunity to provide an unprecedented fine-grain measurement of gas and/or plasma density. In a crossed-sightline configuration, 3-D density diagnosis is possible. This opens the door to developing new physics understanding both for disruption mitigation technology and on experimental fusion research devices. Understanding usually leads to both control and improvement. Details of the diagnostic system design and expected performance will be presented.

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