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Interferometric and holographic imaging combined: correlating interface deformations with 3D tracking of interfacial particles DAVID KAZ, VINOTHAN MANOHARAN, Harvard University — We employ the techniques of digital holography and interference phase mapping to investigate particles on interfaces. Digital holography is used to track the positions of small (micron sized) particles to within a few nanometers in three dimensions, while optical interferometry maps interfacial deformations to within a few tens of nanometers. By utilizing both techniques simultaneously, we correlate the 3D position of particles trapped on an interface with deformations of that interface at up to 1000 frames per second. Such comprehensive data will serve to answer questions regarding the capillary interactions of particles on an interface.

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