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Tomographic Reconstruction of Flows in DIII-D¹ WILLIAM MEYER, STEVE ALLEN, Lawrence Livermore Natl Lab, JOHN HOWARD, Australian National University — The DIII-D flow diagnostic produces video of interference images with horizontal fringes that contain spatial emissivity, flow, and temperature information from the lower divertor. Frames are demodulated and compared against a reference interference image to produce phase and contrast images which are the emissivity weighted flow and temperature integrated along the line-of-site, respectively. Inversion of the flow (phase) images require knowledge of the scalar product of the parallel flow vector, from the equilibrium calculations, and each camera pixel line-of-site. Four response matrices are pre-calculated: the emissivity line integral and the line integral of the scalar product of the lines-of-site with the orthogonal unit vectors of parallel flow. Equilibrium data determines the relative weight of the component matrices used in the final flow matrix. Early reconstructions have shown flow reversal during forward and reverse toroidal field plasmas. Ongoing work is to extract temperature information from the contrast images.

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