POD and Fourier analysis of composite-field-of-view PIV applied to the far turbulent axisymmetric jet: Part I KNUD ERIK MEYER, Technical University of Denmark, MAJA WÄNSTRÖM, WILLIAM K. GEORGE, Chalmers University of Technology — PIV measurements were made in a streamwise plane parallel to and intersecting the centerline of a 1 cm turbulent round air jet at exit Re = 20,000. Two HiSense 4 Mpxl cameras were positioned with overlap to produce a total field-of-view which covered the extent of the jet from x/D=31 to x/D=100. Radial coverage of the jet was $\pm 0.2 * x$ at all downstream positions. The goal was to be able to effect a logarithmic coordinate transformation of the velocity field into a homogeneous field in similarity coordinates (i.e., $\xi = \ln(x/D)$, see [1]) for which Fourier transformation in ξ is the theoretically optimal representation. The extended streamwise field was necessary to minimize finite window effects. The magnification of each camera was adjusted to attempt to maintain constant relative spatial resolution.

1. Ewing, D. et al. **J. Fluid Mech., 577**, 309-330, 2007.

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