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POD applied to stereo PIV data of the far turbulent axisymmetric jet M. WÄNSTRÖM[1], W.K. GEORGE[2], Chalmers U. of Tech., Gothenburg, Sweden, K.-E. MEYER[3], DTU, Lyngby, Denmark — An experiment was performed to evaluate spatial resolution requirements for multiple and single component POD applications to cross-sections of the far axisymmetic jet. The jet of Gamard et al.[4] was used at an exit Reynolds number of 20,000. Three-component velocity data were obtained at downstream positions of 60, 70 and 100 diameters using stereoscopic PIV. In addition to the standard PIV processing, a novel application of the snapshot POD was used to filter the data in preparation for the classical POD analysis. The two-point Reynolds stress tensor was reconstructed from the dominant snapshot POD-modes, and the convex hull of this data set was extended using symmetry conditions. The results are believed to be relevant to not only understanding previous experiments with hot-wires, but also DNS and LES.

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[4]Gamard, S. et al. J. Fluid Mech., 514, pp. 205-230 (2004).

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