Correlation Reconstruction Tomographic PIV RODERICK LA FOY, Virginia Tech, PAVLOS VLACHOS, Purdue University — A new volumetric Particle Image Velocimetry technique was developed that outputs accurate velocity measurements up to very high seeding densities while requiring lower computational expenditure. This technique combines the tomographic and cross-correlation steps by directly reconstructing the 3D cross-correlation volumes. Since many particles contribute to a single correlation peak, this decreases the noise contributions from ghost reconstructions, allowing accurate velocity measurements to be made at exceptionally high seeding densities. Additionally the overall computational cost is lowered by combining the reconstruction and cross-correlation steps. Results comparing the errors of the new technique applied to both simulated and experimental data will be presented.

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