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Structure of three-dimensional turbulent offset jets with small offset distances MARTIN AGELIN-CHAAB, MARK TACHIE, University of Manitoba — An offset jet is a jet that discharges into a medium above a wall which is offset by a certain distance. The "Coanda effect" forces the offset jet to deflect towards the wall and eventually attaches itself to the wall. The only detailed study of three-dimensional offset jets (3DOJs) did not report the flow field in the region from the jet exit to the point where the jet attaches itself to the wall. In this region flow reversal is expected. Velocity measurements of 3DOJs were conducted using particle image velocimetry. The 3DOJs have different jet exit offset distances (h) normalized by the jet exit diameter (d) of $h/d = 0.5$ to 4. The Reynolds numbers based on the jet exit velocities and jet exit diameters were 5000, 10000 and 20000. The detailed flow fields of the 3DOJs were examined in terms of mean velocities, and one-point turbulence statistics. In view of the wide range of length and temporal scales that are present in turbulent flows, multi-point turbulence statistics such as two-point velocity correlations and proper orthogonal decomposition are used to document the salient features of 3DOJs.

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