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**Unsteady Surface-Pressure Measurements and Time-Resolved Flow Visualization of a Normally and Obliquely Impinging Jet** MALEK AL-AWENI, AHMED NAGUIB, Michigan State University — In comparison to heat transfer and flow field data, there is little information regarding the space-time characteristics of the surface pressure fluctuations in impinging jets. Moreover, when available, such measurements are rarely accompanied by flow field information, making it difficult to identify the mechanisms/flow structures leading to pressure generation. The current work employs an axisymmetric air jet impinging on a flat wall to identify the flow features associated with significant wall-pressure signatures. To this end, unsteady surface-pressure measurements, using an embedded electret microphone array in the impingement plate, and time-resolved smoke-wire flow visualization are carried out for normal and oblique incidence of the jet. The results show the presence of two dominant modes of pressure oscillation, one is observed throughout the measurement domain and the other found primarily within the wall-jet zone. Links are drawn between these modes and the flow structures, yielding information useful for constructing structure-based models of the surface pressure in impinging jets.

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