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Spanwise correlation lengths of unsteady surface pressure behind a backward facing step MICHAEL BILKA, MARK PALUTA, SCOTT MORRIS, University of Notre Dame — The flow over a backward facing step is a canonical test case used for the study of separated flow problems. Study of this configuration has led to deeper understanding of the behavior and structure of separated flows. For many practical applications, it is not only necessary to understand the flow behavior but also the generated unsteady surface pressure. This information can provide a basis for understanding the unsteady loading experienced by a body, which can generate unwanted flow-structure interactions, such as vibration and sound radiation. The present work investigates the unsteady surface pressure generated by the separated flow behind a backwards facing step. Using an extensive array of surface pressure sensors, measurement is made not only of the unsteady surface pressure but also of the spanwise correlation of the surface pressure fluctuations at various locations of separation and reattachment. The spanwise correlation has received limited treatment in the literature for separated flows and is important for the modeling and prediction of fluid-structure interactions.

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