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Modal analysis of fluid flows using variants of proper orthogonal decomposition[1] CLARENCE ROWLEY, Princeton University, SCOTT DAWSON, California Institute of Technology — This talk gives an overview of several methods for analyzing fluid flows, based on variants of proper orthogonal decomposition. These methods may be used to determine simplified, approximate models that capture the essential features of these flows, in order to better understand the dominant physical mechanisms, and potentially to develop appropriate strategies for model-based flow control. We discuss balanced proper orthogonal decomposition as an approximation of balanced truncation, and explain connections with system identification methods such as the eigensystem realization algorithm. We demonstrate the methods on several canonical examples, including a linearized channel flow and the flow past a circular cylinder.

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