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Understanding Core Collapse Through Dynamic Mode Decomposition HALLEY AYCOCK-RIZZO, MOHD ALI, ANDREW TENNEY, MATTHEW BERRY, Syracuse University, ZACHARY BERGER, Penn State, MARK GLAUSER, Syracuse University — The column mode (or preferred mode) and the shear layer mode in an axisymmetric high subsonic jet are analyzed using Dynamic Mode Decomposition (DMD) to study their relation to core collapse and instability. High frequency pressure sensor data at the exit of the jet are correlated to dominant DMD amplitudes. We focus on two spatial regions of interest: before and after core collapse. In the former, we investigate the contribution of both modes as they interact with the structure of the jet, and in the latter, where we find no shear layer mode, we are able to find remnants of the column mode and account for instability in terms of its evolution. Observations of the jet at different Mach numbers allow us to draw conclusions about core collapse in terms of the structure of the column mode in the transition between these two regions.

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