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Numerical computation of linear instability of detonations¹

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— We propose a method to study linear stability of detonations by direct numerical computation. The linearized governing equations together with the shock-evolution equation are solved in the shock-attached frame using a high-resolution numerical algorithm. The computed results are processed by the Dynamic Mode Decomposition technique to generate dispersion relations. The method is applied to the reactive Euler equations with simple-depletion chemistry as well as more complex multistep chemistry. The results are compared with those known from normal-mode analysis.

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