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Synchronization of Traveling Waves within a Hollow-Core Vortex

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Abstract : The present paper expands details and confirms the transition mechanism between two subsequent polygonal patterns of the hollow-core vortex. Using power spectral analysis, we confirm in this work that the transition from any N-gon to (N+1)-gon pattern observed within a hollow-core vortex of shallow rotating flows occurs in two steps. The regime was quasi-periodic before the frequencies lock (synchronization). The ratios of locking frequencies were found to be equal to (N-1)/N.

Keywords : patterns, swirling, quasi-periodic, synchronization
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