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The spatiotemporal dynamics of a shift-invariant set of dispersively coupled single-well Duffing oscillators is studied. The transitions from spatiotemporal chaos to cluster and complete synchronization states are analytically investigated, as well as the Hopf bifurcations to instability. It is found that the underlying mechanism of these transitions relies on the motion of the representative points of the system's non-degenerated spatial Fourier modes in the parametric Strutt diagram. A scaling law is used to demonstrate that the compact interval of the scalar coupling parameter values leading to cluster synchronization broadens in a square power-like fashion as the number of oscillators is increased. Numerical simulation is performed to confirm the analytic approach.

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