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Computational Homology in Rayleigh-Benard convection experiments[1] MICHAEL SCHATZ, HUSEYIN KURTULDU, Georgia Institute of Technology, MARCIO GAMEIRO, KONSTANTIN MISCHAIKOW, Rutgers University — Computational homology is used to analyze the spiral defect chaos (SDC) state in Rayleigh-Benard convection. Image time series of flows visualized by shadowgraphy are used as input; the homology analysis yields Betti numbers, which counts the number of connected components and holes in the flow patterns. Probability distributions and entropies derived from the Betti number measurements are used for identifying and characterizing different states in the SDC regime.

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