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Power consumption and dynamic structure in electroconvecting liquid crystals[1] JOHN CRESSMAN, ZRINKA GREGURIC FERENCEK, TYRUS BERRY, TIMOTHY SAUER, George Mason University — A wide range of driven systems display complex, but correlated, dynamics as well as large fluctuations in energy injection, storage, and dissipation. We use an electroconvecting nematic liquid crystal as a model system to investigate the relationship between dynamical structure and energy flow. We use a dimensionality-reduction algorithm to identify the creation, evolution and annihilation of patterns of defects in a weakly-driven electroconvective state. By simultaneously measuring the electrical power drawn by the sample we are able to determine correlations between energy injection and defect dynamics. We will discuss these correlations as well as the interplay between energy flow and dynamic structures in this system.

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