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Order Parameter and Response to External Fields in a Spatiotemporal Chaotic System¹ RINTO A NUR QOMARU ZAMAN, TATSUHIRO UEKI, KOYO TAMURA, YOSHIKI HIDAKA, NORIKO OIKAWA, SHOICHI KAI, Kyushu University — For Soft-Mode Turbulence (SMT) which is a new type of spatiotemporal chaos generated by the nonlinear interaction between the Nambu-Goldstone modes and the convective modes in electroconvection of homeotropic nematic systems, a new order parameter called *patternordering* is introduced to measure the degree of order of the convective pattern. It is revealed that two types of SMT pattern called oblique roll and normal roll patterns have zero and finite pattern ordering, so that they can be regarded respectively, as a disordered and an ordered pattern when the so-called Lifshitz frequency is the transition point. Later, by applying an external magnetic field for the oblique roll regime, the Nambu-Goldstone modes is suppressed and therefore leads to a nonzero pattern ordering which behaves as a response. By using an analogy with magnetic susceptibility, we investigate a kind of *patternsusceptibility* as a degree of order in response of the convective pattern to the applied field. In addition, ac susceptibility due to the modulating field is also discussed.

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