

Abstract Submitted  
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**Dynamics of isothermal phase transition of liquid crystal with zero anchoring**<sup>1</sup> JINXIN FU, KARTHIK NAYANI, JUNG OK PARK, MOHAN SRINIVASARAO, Georgia Institute of Technology — Liquid crystal (LC) is an ideal system to mimic the cosmological symmetry breaking in the laboratory. The formation of LC string defects in film and bubble has been shown to be analogous to the formation of cosmic strings previously. Here we study the dynamics of LC isothermal transition from isotropic to nematic phase in a three-dimensionally isotropic environment, which enables us to observe the simultaneous symmetry breaking of matter without any external heat transfer or anchoring boundary condition. The isothermal phase transition is realized by the photochemical conversion of the trans-form to the cis-form of an Azobenzene compound that is added into liquid crystal E7. And a medium composed of carbopol and SDS surfactant provides the zero anchoring. The dynamics of the nucleation of LC and defects are studied under microscope with high-speed camera.

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