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The stripe phase as a dynamical instability of the $J = 2^+$, $m_J = 0$ Higgs field in confined superfluid ^{3}He TAKESHI MIZUSHIMA, Osaka University, J. A. SAULS, Northwestern University — Superfluid ^{3}He exhibits a variety of topological and broken symmetry phases. In a thin film, a "stripe" phase that spontaneously breaks translational symmetry has been predicted on the basis of weak-coupling quasiclassical theory,[1] and within strong-coupling Ginzburg-Landau (GL) theory.[2] Starting from a Lagrangian formulation for the dynamics of the order parameter for ^{3}He, we show that a superfluid film with translational symmetry is dynamically unstable for a range of film thicknesses of order several coherence lengths. The time-dependent GL Lagrangian describes the space-time Bosonic fluctuations around a stationary state of the GL functional. For a translationally invariant B-phase film the amplitude of the Bosonic mode dispersing from the $J = 2^+, m_J = 0$ Higgs mode softens at a finite wavevector, $Q \simeq 0.3/\xi_0$, then develops a pole in the upper half of the complex frequency plane signalling a dynamical instability with exponential growth towards a new ground state with spontaneously broken translation symmetry. We discuss the dynamical instability and its relation to the predicted stripe phase of thin films of superfluid ^{3}He.

[1] A.B. Vorontsov and J.A. Sauls, PRL **98**, 045301 (2007).
[2] J.J. Wiman and J.A. Sauls, JLTP **184**, 1054 (2016).

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