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Hidden vortex lattices in a thermally paired superfluid EGOR BABAEV, UMass Amherst and KTH Stockholm, ESKIL DAHL, ASLE SUDBO, NTNU Trondheim — We study the evolution of rotational response of a two-component superfluid mixture with intercomponent drag interaction, as the system undergoes a transition into a paired phase at finite temperature. We find that the transition into a paired state manifests itself in a change of (i) vortex lattice symmetry, and (ii) nature of vortex state. Instead of a usual vortex lattice, the system forms a highly disordered vortex tangle which constantly undergoes merger and reconnecting processes involving different types of vortices, with a breakdown of translational symmetry only in a statistical sense. We discuss how it can complicate an observation of a paired bosonic state via rotational response.

Egor Babaev
UMass Amherst and KTH Stockholm

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