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The role of nematic fluctuations in the thermal melting of pair-density-wave phases in superconductors¹ DANIEL BARCI, Department of Physics, Universidade Estadual do Rio de Janeiro, Brazil, EDUARDO FRADKIN, Department of Physics, University of Illinois — We study properties of phase transitions of the superconductor liquid crystal phases, and analyze the competition between the recently proposed Pair Density Wave (PDW) and nematic $4e$ superconductor ($4eSC$). Nematic fluctuations enhance the $4eSC$ and suppress the PDW phase. For a system decoupled from a lattice, the PDW state exists only at $T = 0$ and the low temperature phase is a nematic $4eSC$ with short ranged PDW order.

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