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# Renormalization theory for the Fulde-Ferrell-Larkin-Ovchinnikov states at $T > 0$

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## Abstract

We analyze the effect of order-parameter fluctuations on the superfluid density wave states known as Fulde-Ferrell-Larkin-Ovchinnikov (FFLO) phases in neutral Fermi systems. We identify a tendency to renormalize the ordering wave-vector to zero by fluctuations. The results indicate that the FFLO states may be unstable as thermodynamic phases both in dimensionality  $d=2$  and  $d=3$  at temperatures  $T > 0$ .

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