Abstract Submitted
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p-wave superfluid shells for trapped fermions with population imbalance[1] AMMAR KIRMANI, KHANDKER QUADER, MAXIM DZERO, Kent State University — We present the phase diagram for a p-wave fermionic superfluid with imbalanced populations in a potential trap. We find shells of various superfluid phases, whose realization is determined by the parameters of a trap. In order to compute the resulting phase diagram, we use weak-coupling BCS theory together with the local density approximation in which the effect of the trapping potential is accounted for by a spatially inhomogeneous chemical potential. We compare our phase diagram with the one found for the trapped population imbalanced s-wave fermionic superfluid [Lin, Yi & Duan, Phys. Rev. A 74, 031604R (2006)], and also point out key differences with results for the population imbalanced p-wave case in the absence of a trap [Liao, Popescu & Quader, Phys. Rev. B 88, 134507 (2013)].

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