

Abstract Submitted
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Bardeen-Cooper-Schrieffer pairing of composite fermions¹ ANIRBAN SHARMA, SONGYANG PU, JAINENDRA JAIN, Pennsylvania State University — The pairing of composite fermions is thought to lead to remarkable physics, such as the topological superconductivity and non-Abelian Majorana modes [1,2]. We investigate the problem by constructing a p-wave paired BCS wave function of composite fermions [3] on torus geometry and minimizing the energy as a function of the gap parameter. Our results show clear evidence of pairing at $\nu = 5/2$, but no evidence of pairing at $\nu = 1/2$. We find that the lowest energy BCS function has the highest overlap with the Pfaffian wavefunction. We search for but do not find the spin-singlet pairing of composite fermions at $\nu = 1/2$. We also consider other pairing symmetries and investigate the Hall viscosity for the BCS wavefunction in different phases.

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- [2] N. Read and D. Green, Phys. Rev. B 61, 10267 (2000)
- [3] G. Moller and S. H. Simon, Phys. Rev. B 77,075319 (2008)

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