Abstract Submitted
for the MAS20 Meeting of
The American Physical Society

**Hall viscosity of the composite-fermion Fermi seas for fermions and bosons**[1] SONGYANG PU, Pennsylvania State University — The Hall viscosity has been proposed as a topological property of incompressible fractional quantum Hall states and can be evaluated as Berry curvature. This paper reports on the Hall viscosities of composite-fermion Fermi seas at $\nu = 1/m$, where $m$ is even for fermions and odd for bosons. A well-defined value for the Hall viscosity is not obtained by viewing the $1/m$ composite-fermion Fermi seas as the $n \to \infty$ limit of the Jain $\nu = n/(nm \pm 1)$ states, whose Hall viscosities $(\pm n + m)\hbar\rho/4$ ($\rho$ is the two-dimensional density) approach $\pm\infty$ in the limit $n \to \infty$. A direct calculation shows that the Hall viscosities of the composite-fermion Fermi sea states are finite and relatively stable with system size variation. However, they are not topologically quantized in the entire $\tau$ space. I find that the $\nu = 1/2$ composite-fermion Fermi sea wave function for a square torus yields a Hall viscosity that is expected from particle-hole symmetry and is also consistent with the orbital spin of $1/2$ for Dirac composite fermions. I compare my numerical results with some theoretical conjectures.

[1]This work was supported in part by the U. S. Department of Energy, Office of Basic Energy Sciences, under Grant No. DE-SC0005042.

Songyang Pu
Pennsylvania State University

Date submitted: 01 Nov 2020 Electronic form version 1.4