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Exact diagonalization study of $\nu = 1/3 + 1/3$ bilayer quantum Hall in search of Fibonnacci anyons[1] EUN-AH KIM, ABOLHASSAN VAEZI, KYUNGMIN LEE, Cornell University — Non-abelian states with Fibonnacci anyons that can support universal topological quantum computation have been elusive. Recently it has been proposed that a remarkably simple setting of Abelian quantum Hall bilayer could support an exotic state with Fibonnacci anyons (Vaezi and Barkeshli, arXiv:1403.3383). Here we explore $\nu = 1/3 + 1/3$ bilayer quantum Hall system considering different possibilities for interaction between bilayers using exact diagonalization. We find a sizable region in phase space potentially exhibiting topological degeneracy expected of Fibonnacci anyon states.

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