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Bilayer mapping of the paired quantum Hall state in the half-filled second Landau level JAE-SEUNG JEONG, KWON PARK, Korea Institute for Advanced Study — The fractional quantum Hall effect observed in the half-filled second Landau level is one of the most fascinating phenomena in condensed matter physics due to the possibility of emergent pairing with quasiparticle excitations satisfying non-Abelian statistics. The leading theory for the paired quantum Hall state in the half-filled second Landau level is based on the Moore-Read Pfaffian wave function, which is intimately connected with the Halperin (331) wave function for the bilayer quantum Hall system in the sense that the former is obtained via antisymmetrization of the spatial part of the latter. Motivated by this intriguing connection, we investigate a generalized mapping between the bilayer and the paired quantum Hall state at half filling via exact diagonalization in the torus geometry.

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