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Integer and Fractional Quantum Hall Effect of Two-Component Bosons[1] YINGHAI WU, JAINENDRA JAIN, The Pennsylvania State University — We investigate integer and fractional quantum Hall states for two-component bosons in the lowest Landau level at filling factors $\nu = 2/3$, $4/5$, $4/3$, and 2, using the generic label "spin" for the two components. We study ground states, excitations, edge states and entanglement spectrum for systems with up to 16 bosons, and construct explicit trial wave functions to clarify the underlying physics. For $\nu = 4/3$ a "non-Abelian spin-singlet" state has been proposed to occur for a 2-body contact interaction; we find that it is more likely that the actual state here is a spin-singlet state of reverse-flux-attached composite fermions at filling $\nu^* = 4$. The incompressible state at $\nu = 2$ provides an example of bosonic integer topological states; it can be understood as the spin-singlet state of reverse-flux-attached composite fermions at $\nu^* = 2$.

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