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**Edge Excitations and Non-Abelian Statistics in the Moore-Read State: A Numerical Study in the Presence of Coulomb Interaction and Edge Confinement**[1] KUN YANG, Florida State University, XIN WAN, Zhejiang Univ., China, EDWARD REZAYI, California State Univ., Los Angeles — We study the ground state and low-energy excitations of fractional quantum Hall systems on a disk at filling fraction 5/2, with Coulomb interaction and background confining potential. We find the ground state that has the same angular momentum quantum number of, and subtantial overlap with the Moore-Read state is stable within a finite but narrow window in parameter space. The corresponding low-energy edge excitations contain a fermionic branch and a bosonic branch, with widely different velocities. A short-range repulsive potential can stabilize a charge +e/4 quasihole at the center, leading to a different edge excitation spectrum due to the change of boundary conditions for the edge Majorana fermion mode, clearly indicating the non-Abelian nature of the quasihole. On the other hand the stabilization of a charge +e/2 quasihole does not change the characteristics of the fermionic edge excitation spectrum qualitatively. Possible edge instabilities due to the competition between Coulomb interaction and confining potential will be discussed.

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