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Abelian and non-abelian quasi-particles as domain-wall type defects ALEXANDER SEIDEL, National High Magnetic Field Laboratory, DUNG-HAI LEE, University of California, Berkeley; Lawrence Berkeley National Laboratory — The traditional framework to study fractional quantum Hall states is based on Laughlin type wavefunctions and Chern-Simons field theories. Recently, a new framework has been proposed that puts stronger emphasis on the one-dimensional (1d) Hilbert space structure of Landau levels. This formalism is based on the fact that all known many-body wavefuntions describing fractional quantum Hall liquids reduce to simple one-dimensional charge-density-wave (CDW) patterns when studied on a thin torus or cylinder. These CDW states are adiabatically connected to the bulk quantum Hall liquid states when the circumference of the cylinder or torus is increased. Many general properties of fractional quantum Hall systems are rooted in these CDW states, such as degeneracies and fractional quantum numbers. In this talk, it will be shown in particular how the properties of the $\nu = 1$ bosonic Pfaffian state are encoded in the corresponding CDW-patterns. It will also be explained how even braiding statistics can be addressed in a language of adiabatically evolved 1d domain-wall states, at least in the abelian case.

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