

**Speaker:** Gunnar Möller

**Title:** Self-similarity of spectral response functions for fractional quantum Hall states with long-range interactions

**Abstract:** Spectral response functions are central quantities in the analysis of quantum many-body states, and capture their responses to external perturbations and are measurable in experiments. We will discuss a dynamical density structure factor for the fermionic  $\nu=1/3$  fractional quantum Hall states on a torus, using the continued fraction method to compute the dynamical correlation function. We find a discrepancy between the structure factors corresponding to the short-range " $V_1$ " and long-range Coulomb interactions, despite both models yielding ground states in the same universality class. Additionally, our analysis of the response for the case of long-range interactions exposes an inherent self-similarity of the structure factor in the frequency domain.