

Andrey's Title/Abstract

Bimetric theory of fractional quantum Hall states

Abstract: Fractional quantum Hall (FQH) states are topologically ordered. Additionally, FQH states support a collective neutral excitation known as the Girvin-MacDonald-Platzman (GMP) mode or magnetoroton. Certain features of this mode are independent of the microscopic details. The objective of the talk is to construct an effective theory that includes both topological properties and the massive GMP mode. The theory reproduces the universal properties of chiral lowest Landau level (LLL) FQH states which lie beyond the TQFT data, such as the projected static structure factor and the GMP algebra. The dynamics of the mode is described by a fluctuating rank-2 symmetric, positive-definite tensor, which leads to a natural geometric (or "gravitational") interpretation of the GMP mode.