

Speaker: Dung Nguyen Xuan

Title: From Fractional Quantum Hall to (non-linear) higher rank symmetry

Abstract: In this talk, I will show that electrons in the lowest Landau level limit of FQH enjoy the so-called area-preserving diffeomorphism symmetry. This symmetry is the long-wavelength limit of the  $W$ -infinity symmetry. The area-preserving diff is a non-abelian higher-rank gauge theory whose linearized version is the traceless symmetric tensor gauge theory. As a consequence of the symmetry, the electric dipole moment and the trace of the quadrupole moment are conserved on a flat background, which demonstrates the fractonic behaviors of FQH excitations. I will derive the renowned Girvin-MacDonald-Platzman (GMP) algebra and the topological Wen-Zee term using the area-preserving diff symmetry.