

**Title:** Quantum Hall condensates

**Abstract:** Superconductors are states of matter where electrons can flow without any dissipation. Quantum Hall states on the other hand are insulating states of matter created by the application of a magnetic field, which quantizes the energy of the electrons moving in cyclotronic orbits. Because of the Meissner effect, a property by which superconductors entirely expel a magnetic flux, those two states do not easily coexist. I will discuss the fascinating physics that follows from superconducting condensation in quantum Hall states that do not require any magnetic flux [1]. Those states can be created in strained crystals and optical lattices, where the strain mimics the effect of a magnetic field. I will show that condensation in this new quantum state of matter is feasible and has remarkable experimental signatures [2].

[1] B. Uchoa, Y. Barlas, Phys. Rev Lett. 111, 046604 (2013)

[2] K. Gunawardana, B. Uchoa, Phys. Rev. B 91 241402(R) (2015).