

# Linear and nonlinear quantum dynamics of fractional quantum Hall fluids

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In this talk I will review recent theoretical results on the linear, nonlinear and quantum dynamics of the edge modes of a trapped fractional quantum Hall fluid. A generalized nonlinear chiral Luttinger liquid theory will be presented, together with its validation against numerical results obtained with a combination of Monte Carlo and exact diagonalization methods. A first application of this theory to quantum nonlinear optics of edge waves will be discussed and schemes to generate quantum states of the edge modes will be proposed. Perspectives in the direction of using quantum point contacts as nonlinear beam splitters will be finally highlighted.

**Orateur:** CARISOTTO, Iacopo (CNR-INO, Pitaevskii BEC Center, Trento Italy)