



Contribution ID: 24

Type: **not specified**

## Chiral currents in Bose-Einstein condensates subject to current-density interactions

*Friday 26 January 2024 10:30 (20 minutes)*

Persistent currents in quasi-one-dimensional Bose-Einstein condensates become chiral in the presence of current-density interactions. This phenomenon is explored in ultracold atoms loaded in a rotating ring geometry, where diverse current-carrying stationary states are analytically found to generalize previously known solutions to the mean-field equations of motion. Their dynamical stability is tested by numerical simulations that show stable currents for states with both constant and modulated density profiles, while decaying currents appear only beyond a unidirectional velocity threshold. Recent experiments in the field place these states within experimental reach.

**Presenter:** ARAZO (UNIVERSITAT DE BARCELONA / ICCUB), Maria

**Session Classification:** Day 2