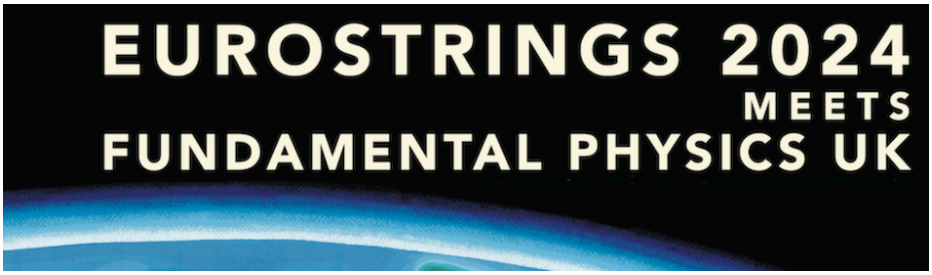

Contribution ID: **173** Type: **Plenary talk**

Linear dynamical instabilities and the laws of thermodynamics

Friday 6 September 2024 11:30 (30 minutes)

Phases of matter can be subject to various instabilities. I will show that interacting systems with a hydrodynamic regime at late times and long distances are dynamically stable under linear perturbations provided the matrix of static susceptibilities is positive definite and the second law of thermodynamics is obeyed. The argument holds irrespective of boost symmetries, extends to theories with only approximate or spontaneously broken global symmetries. A concrete example is the Landau instability of superfluids at large superflow, which can be recast as a thermodynamic instability irrespective of any underlying quasiparticle description.

Link to publication (if applicable)

Presenter: GOUTÉRAUX, Blaise

Session Classification: Plenary session