Contribution ID: **25** Type: **not specified**

Sound modes and instabilities in a relativistic superfluid

Tuesday 25 March 2014 17:00 (20 minutes)

Compact stars are likely to contain superfluid matter, either in the form of nuclear or quark matter, or both. The hydrodynamics of superfluids is usually described in terms of a two-fluid model. I will discuss how such a two-fluid model can be derived from field theory and apply the results to compute the properties of first and second sound for arbitrary temperatures and (uniform) superfluid velocities. I will also discuss the two-stream instability - known from plasma physics - that manifests itself in an unstable sound mode and that is potentially relevant for the fluid dynamics in the interior of the star.

Author: SCHMITT, Andreas (Vienna University of Technology)

Presenter: SCHMITT, Andreas (Vienna University of Technology)

Session Classification: Evening session - Parallel A