Contribution ID: **48** Type: **not specified**

Exact solutions in statistical quantum field theory

Wednesday, 8 September 2021 10:30 (30 minutes)

An exact form of the stress-energy tensor in quantum field theory (QFT) with a local equilibrium statistical operator would be a crucial ingredient of the semiclassical Einstein equation, with non-trivial quantum corrections to the equation of state. While a solution in a curved background is still unknown, much can be learned from solving related problems in flat space-time. In this talk, I will present some recent results in statistical QFT obtained with equilibrium and non-equilibrium density operators. A general method to calculate the exact mean value of the stress-energy tensor at equilibrium with rotation and acceleration without solving PDE's in curvilinear coordinates is introduced and the quantum corrections to the ideal fluid form discussed. In the second part, the exact solution for an expanding velocity field with longitudinal boost invariance is presented along with the quantum corrections to free-streaming.

Primary authors: BECATTINI, Francesco (Istituto Nazionale di Fisica Nucleare); Dr PALERMO, Andrea (Università di Firenze); Dr BUZZEGOLI, Matteo (Iows State University); Dr RINDORI, Davide

Presenter: BECATTINI, Francesco (Istituto Nazionale di Fisica Nucleare)

Session Classification: Beyond Einstein's Gravity

Track Classification: Gravity theory