Università degli Studi di Trieste

Dipartimento di Fisica

Seminario

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Campinas, Brazil

Monday, May 21, 2.30 PM – Room 204, Leonardo Building – Strada Costiera 11 – Trieste

The Unruh effect, the equivalence principle, and quantum field theory

The idea that the Unruh effect has a role in the apparent thermalization of systems produced in hadronic collisions has gained quite a lot of popularity in the last few years [1]. The systematic exploration of this idea, however, is hindered by the fact that the conceptual basis for the Unruh effect is still a controversial subject. In particular, calculations such as [2] suggest that the Unruh effecqut can be understood as a quantum field theory equivalent of a "Coriolis force" accounting for the non-inertiality of the reference frame rather than an "objective" physical effect.
The correctness of this picture does not rule out the Unruh thermalization scenario, bust suggests that it can be understood as a version of strong-field thermalization viewed in a non-inertial frame.
We use neutrino oscillations as a laboratory to this example, show that it indicates a fundamental issue between the equivalence principle and quantum fieldtheory and suggest ways to resolve this

[1] D.Kharzeev,K.Tuchin, Nucl.Phys.A753:316-334,2005
[2] D. Vanzella, G. Matsas Phys.Rev.Lett.87:151301,2001
[3] Y. Takahashi, H. Umezawa, Int.J.Mod.Phys. B10 (1996) 1755-1805 and M.Horibe,A.Hosoya,N Yamamoto, Prog.Theor.Phys. 74 (1985) 1299

Organizzazione a cura di: A. Bassi, E. Vesselli

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Everyone interested in the topic is welcome to attend

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