

## **The 140th HENPIC seminar by Prof. Francesco Becattini (University of Florence), May 12, 2021, Wednesday, 14:00 (UTC+8)**

Talk title: New developments of spin physics in relativistic heavy ion collisions

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Speaker: Prof. Francesco Becattini, University of Florence

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**Abstract:**

Spin is a relatively new topic in the rather mature field of relativistic heavy ion collisions and it has attracted much interest over the past few years. The predictions of the hydrodynamic model of the Quark Gluon Plasma, providing the proportionality between spin polarization vector and thermal vorticity, have been confirmed by the measurements of global spin polarization of Lambda hyperons in peripheral collisions. However, the measurements of spin polarization as a function of the hyperon momentum revealed consistent discrepancies with respect to the theoretical predictions. In this talk, I will present a recent theoretical development which apparently implies a solution of the local polarization puzzles. The covariant theory of quantum relativistic fluids at local equilibrium indeed predicts an additional term, hitherto overlooked, of the spin polarization vector which is proportional to the shear tensor. This additional contribution is able to reconcile the theory with the experimental data if the Quark Gluon Plasma hadronizes at a fixed temperature.

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**About the speaker:**

Francesco Becattini is currently a full professor at the University of Florence (Italy) and an associate member of the Italian National Institute of Nuclear Physics. He studied in Florence, Pisa and CERN and got his PhD at the University of Florence in 1996. He is a member of the European science academy "Academia Europaea". His main research interests are in relativistic heavy ion physics, relativistic statistical mechanics, statistical field theory.

**Presenter:** Prof. BECATTINI, Francesco