Workshop on QGP Phenomenology

Report of Contributions

Contribution ID: **1**　　　　　　　　　　　　　　　　　Type: **not specified**

Welcome

Wednesday, 26 May 2021 13:45 (15 minutes)

Presenter: MOHAMMADI NAJAFABADI, Mojtaba (Institute for Research in Fundamental Sciences (IR))

Session Classification: First session

Contribution ID: **2**　　　　　　　　　　　　　　　　Type: **not specified**

QGP Phenomenology and the big challenge of small systems

Wednesday, 26 May 2021 14:00 (1 hour)

Presenter: WIEDEMANN, Urs (CERN)

Session Classification: First session

Contribution ID: **3**   Type: **not specified**

The most essential experimental aspects of past and future Heavy-Ion physics experiments

Wednesday, 26 May 2021 15:00 (45 minutes)

Presenter: SCHMAH, Alexander (Ruprecht Karls Universitaet Heidelberg (DE))

Session Classification: First session

Contribution ID: **4**   Type: **not specified**

Early time dynamics of the QGP

Wednesday, 26 May 2021 18:30 (45 minutes)

Presenter: Prof. SCHLICHTING, Soeren (Universität Bielefeld)

Session Classification: Third Session

Contribution ID: **5**   Type: **not specified**

The Out of Equilibrium Search For the QCD Critical Point

Wednesday, 26 May 2021 18:00 (30 minutes)

Presenter: DORE, Travis (University of Illinois at Urbana-Champaign)

Session Classification: Third Session

Contribution ID: **6**   Type: **not specified**

Introduction to the CGC effective theory

Wednesday, 26 May 2021 16:30 (45 minutes)

Presenter: BOUSSARIE, Renaud (CPHT, École polytechnique)

Session Classification: Second session

Contribution ID: **7**   Type: **not specified**

The ever more complex life of hydrodynamics modes

Monday, 31 May 2021 13:45 (45 minutes)

Presenter: STARINETS, Andrei (Oxford University)

Session Classification: First session

Contribution ID: **8**   Type: **not specified**

Spin tensor and pseudo-gauges in relativistic nuclear collisions

Monday, 31 May 2021 14:30 (30 minutes)

Presenter: WEICKGENANNT, Nora (Goethe University Frankfurt)

Session Classification: First session

Contribution ID: **9**   Type: **not specified**

Deterministic Randomness in Hydrodynamics

Monday, 31 May 2021 15:00 (45 minutes)

Presenter: STEPHANOV, Misha (UIC)

Session Classification: First session

Contribution ID: **10**
Type: **not specified**

Theoretical developments in statistical quantum field theory and the spin physics in the Quark Gluon Plasma

Friday, 28 May 2021 13:45 (45 minutes)

Presenter: BECATTINI, Francesco (Unversity of Florence)

Session Classification: First session

Contribution ID: **11**

Type: **not specified**

Λ polarization from the thermalized jet energy and momentum

Friday, 28 May 2021 14:30 (30 minutes)

Presenter: MATIOLI SERENONE, Willian (Universidade de Campinas)

Session Classification: First session

Contribution ID: **12**   Type: **not specified**

Quantum kinetic theory and the Wigner-function formalism

Friday, 28 May 2021 15:00 (45 minutes)

Presenter: SPERANZA, Enrico (University of Illinois at Urbana-Champaign)

Session Classification: First session

Contribution ID: **13**   Type: **not specified**

Quantum energy-density fluctuations

Friday, 28 May 2021 16:30 (45 minutes)

Presenter: FLORKOWSKI, Wojciech (Jagiellonian University)

Session Classification: Second session

Contribution ID: **14**

Type: **not specified**

Theory of spin hydrodynamics for ultra-relativistic heavy-ion collisions

Friday, 28 May 2021 16:00 (30 minutes)

Presenter: Mr SINGH, Rajeev (Institute of Nuclear Physics Polish Academy of Sciences)

Session Classification: Second session

Contribution ID: **15**   Type: **not specified**

Theoretical aspects of Lambda polarization measurement

Monday, 31 May 2021 19:15 (30 minutes)

Presenter: Dr RYBLEWSKI, Radoslaw (Institute of Nuclear Physics PAN)

Session Classification: Third Session

Contribution ID: **16**   Type: **not specified**

Dynamical description of relativistic heavy-ion collisions

Thursday, 27 May 2021 13:45 (45 minutes)

Presenter: SHEN, Chun (Wayne State University)

Session Classification: First session

Contribution ID: **17**
Type: **not specified**

The evolution of thermodynamic quantities in a 0+1d expanding magnetized plasma

Thursday, 27 May 2021 14:30 (30 minutes)

Presenter: TABATABAEE, Ali (IPM, SPA)

Session Classification: First session

Contribution ID: **18**

Type: **not specified**

Open quantum systems approach to bottomonium suppression in the QGP

Thursday, 27 May 2021 15:00 (45 minutes)

Presenter: STRICKLAND, Michael (Kent State University)

Session Classification: First session

Contribution ID: **19**

Type: **not specified**

Modelling Hydrodynamics

Thursday, 27 May 2021 17:00 (45 minutes)

I will describe a recent addition to the family of causal and
stable models of relativistic hydrodynamics. I will also address the wider question of how one can
match such effective descriptions to underlying microscopic theories.

Presenter: SPALIŃSKI, Michał

Session Classification: Second session

Contribution ID: **20**

Type: **not specified**

Event-by-event simulations of Pb+Pb collisions with anisotropic hydrodynamics

Thursday, 27 May 2021 16:00 (30 minutes)

Presenter: MCNELIS, Michael (Ohio State University)

Session Classification: Second session

Contribution ID: **21**

Type: **not specified**

Polarization: Experimental Status and Future Directions

Friday, 28 May 2021 17:30 (45 minutes)

Presenter: LISA, Mike (Ohio State University (US))

Session Classification: Third Session

Contribution ID: **22**   Type: **not specified**

General-relativistic viscous fluids

Monday, 31 May 2021 16:00 (45 minutes)

The discovery of the quark-gluon plasma that forms in heavy-ion collision experiments provides a unique opportunity to study the properties of matter under extreme conditions, as the quark-gluon plasma is the hottest, smallest, and densest fluid known to humanity. Studying the quark-gluon plasma also provides a window into the earliest moments of the universe, since microseconds after the Big Bang the universe was filled with matter in the form of the quark-gluon plasma. For more than two decades, the community has intensely studied the quark-gluon plasma with the help of a rich interaction between experiments, theory, phenomenology, and numerical simulations. From these investigations, a coherent picture has emerged, indicating that the quark-gluon plasma behaves essentially like a relativistic liquid with viscosity. More recently, state-of-the-art numerical relativity simulations strongly suggested that viscous and dissipative effects can also have non-negligible effects on gravitational waves produced by binary neutron star mergers. But despite the importance of viscous effects for the study of such systems, a robust and comprehensive theory of relativistic fluids with viscosity is still lacking. This is due, in part, to difficulties to preserve causality upon the inclusion of viscous and dissipative effects into theories of relativistic fluids. In this talk, we will survey the history of the problem and report on a new approach to relativistic viscous fluids that solves decade-long questions in the field, paving the way for the systematic investigation of dissipative phenomena in general relativity.

Presenter: DISCONZI, Marcelo

Session Classification: Second session

Contribution ID: **23** Type: **not specified**

Criticality on the hydrodynamic expansion

Monday, 31 May 2021 18:00 (30 minutes)

Presenter: TAGHINAVAZ, Farid (IPM)

Session Classification: Third Session

Contribution ID: **24**

Type: **not specified**

Hydrodynamics and broken chiral symmetry

Monday, 31 May 2021 18:30 (45 minutes)

Presenter: TEANEY, Derek (Stony Brook University)

Session Classification: Third Session

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

Constraining early time dynamics in ultrarelativistic Heavy Ion Collisions

Thursday, 27 May 2021 18:30 (30 minutes)

It is frequently supposed that quark-gluon plasma created in heavy-ion collisions undergoes free streaming at early times. We examine this issue based on the assumption that a universal attractor dominates the dynamics already at the earliest stages, which offers a way to connect the initial state with the start of the hydrodynamic expansion in an approximate but conceptually transparent fashion. We demonstrate that the centrality dependence of the measured particle multiplicities can be used to quantitatively constrain the pressure anisotropy and find that it strongly depends on the model of the initial energy deposition. As an illustration, we compare three initial state models and show that they predict rather different early-time values of the pressure anisotropy. This strongly suggests that assuming free streaming prior to hydrodynamization is not necessarily compatible with a generic initial state model and that features of the pre-hydrodynamic flow need to be matched with the model of the initial state.

Presenter: JANKOWSKI, Jakub (University of Warsaw)

Session Classification: Third Session

Contribution ID: **26**

Type: **not specified**

Medium evolution of a heavy q\bar{q} pair, the large N_c limit

Wednesday, 26 May 2021 17:30 (30 minutes)

Presenter: ESCOBEDO ESPINOSA, Miguel Ángel (Instituto Galego de Física de Altas Enerxías)

Session Classification: Third Session

Contribution ID: **27**
Type: **not specified**

Heavy quark diffusion from the lattice

Thursday, 27 May 2021 18:00 (30 minutes)

Presenter: LEINO, Viljami (Technical University of Munich (TUM))

Session Classification: Third Session

Contribution ID: **28**   Type: **not specified**

Is hydrodynamic stability enough?

Monday, 31 May 2021 16:45 (30 minutes)

It is well known that relativistic hydrodynamic theories, to be "realistic", should be causal and stable. But stable with respect to what? The standard notion of stability one typically refers to is hydrodynamic stability, namely the requirement that on-shell perturbations away from the state of thermodynamic equilibrium remain bounded over time. I will argue that such a stability criterion is not enough to have a complete picture of the reliability of a theory and that there is a more fundamental stability principle, which relativistic fluid theories should obey.

Presenter: GAVASSINO, Lorenzo

Session Classification: Second session

Contribution ID: **29**   Type: **not specified**

Physical characteristics of glasma at very early times

Wednesday, 26 May 2021 16:00 (30 minutes)

Presenter: CZAJKA, Alina (National Centre for Nuclear Research)

Session Classification: Second session

Contribution ID: **30**
Type: **not specified**

Strangeness Neutral Equation of State for QCD with a Critical Point

Monday, 31 May 2021 17:30 (30 minutes)

Presenter: MROCZEK, Debora (University of Illinois at Urbana-Champaign)

Session Classification: Third Session

Contribution ID: **31**

Type: **not specified**

Collective behavior in rarely-interacting systems: time-dependent anisotropic flow coefficients

Thursday, 27 May 2021 16:30 (30 minutes)

Presenter: KERSTING, Nina (Bielefeld University)

Session Classification: Second session