08 - 12 JULY 2019 - PROTEA HOTEL RANCH RESORT -POLOKWANE

Contribution ID: **312**   Type: **Oral Presentation**

Theory of equation of state and transport coefficients for relativistic hydrodynamics in Heavy Ion Collisions and Binary Neutron Star Collisions

Tuesday, 9 July 2019 12:20 (20 minutes)

I will give a review of the nuclear equation of state and transport properties of matter in heavy ion collisions (HIC) and binary neutron star collisions. I will also point out the significance of the equation of state (EoS) and transport coefficients for HIC and astrophysical observables.
I will try to focus on general methods and principles but also touch on specific open questions for future research.

The observation of Neutron Stars and Binary Neutron Star Collisions allows us to constrain the equation of state(Eos) and transport coefficients of the dense matter well beyond the densities available in earth laboratories such as those colliding heavy ions.
The recent observation of gravitational waves GW170817 and its electromagnetic counterparts allows us to constrain the dense matter Eos and transport coefficients in new and complementary ways.

The macroscopic properties of neutron stars depend on how sub-atomic particles interact in their interiors. These interactions are encoded in the equation of state and transport coefficients.

Finally, I will briefly comment on gravitational waves as a signature of quark matter formation in LIGO and SALT/MeerKAT/SKA detection and observations.

Apply to be
 considered for a student
   award (Yes / No)?

No

Level for award
 (Hons, MSc,
   PhD, N/A)?

N/A

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