

Summary of the talks & concluding comments

Selected topics in heavy ion collisions - A series of seminars

Rahul Ramachandran Nair
physicsmailofrahulnair@gmail.com
NCBJ, Warsaw, Poland.
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TALK-1: Rudimentary introduction to ultrarelativistic heavy-ion collisions

Terminologies, basic geometry of collisions, kinematic variables, brief history of heavy-ion collision experiments.

TALK-2: Observables in heavy-ion collisions and signatures of QGP

Idea of a distribution, fitting, single and multi particle observables and some usual techniques of their estimation at high energy colliders.

TALK-3: A brief survey of the experimental results from heavy-ion collisions

A survey of experimental results from the heavy-ion programs at LHC

TALK-4: QCD phase diagram and heavy-ion collisions

QCD phase diagram, idea of scanning the QCD phase diagram with heavy-ion collisions, experimental searches for the QCD critical point.

TALK-5: Thermalisation in high energy collisions

Thermalisation in high energy collisions, mechanisms, observations problems and puzzles.

TALK-6: Thermal hadron production in high energy collisions via Unruh radiation

Brief picture of the mechanism of thermal hadron production in high energy collisions via Unruh radiation.

Talk 7: Theoretical overview of QCD phase transitions

Phase transitions in of purely gluonic and quark gluon systems in various quark mass limits, zero and finite chemical potentials, treatment of critical phenomena in QCD.

Talk 8: Jet physics - Theory and experiments

Origin of QCD jets, jet algorithms, substructure techniques and applications.

Cross check of the ambiguities: Further references

Following are some of the points I found my explanation bit ambiguous during the talk myself. I provide below the references to read about those topics further yourself.

- Some parts of Hanburry Brown Twiss Radii in **Talk 2**
 - [arXiv:nucl-th/0505019](https://arxiv.org/abs/nucl-th/0505019)
 - <https://cds.cern.ch/record/378753/files/9902020.pdf>
- Some of the jet related plots and some plots on nuclear modification factors in **Talk 3**
 - *Eur. Phys. J. Plus* (2016) 131: 52
 - [arXiv:1709.04464](https://arxiv.org/abs/1709.04464)
- Hadron cascade mechanism in **Talk 6** :
 - Chapter 12 of the Book *“Extreme states of matter in strong interaction physics”* by H.Satz
- Some aspects of critical phenomenon in **Talk 7**
 - *Rev. Mod. Phys.* 68, 473 – Published 1 April 1996
 - *The European Physical Journal A* volume 57, Article number: 136 (2021)

Resources

Website : <https://sites.google.com/view/hicseminar2021>

Archive: <https://indico.cern.ch/event/1103564>

Acknowledgements

Thanks to Prof. E Harikumar for organising the series!

Thanks to everyone for signing in and listening for about 9 hours.

Best wishes to the students for their future endeavours!

Hope to meet you all in the world outside the laptop screen soon!