

EP5 Heavy-Ion Collisions Experiments

This course is devoted to experimental aspects of relativistic heavy ion collisions.

In the introduction part, I recall briefly the theoretical aspects that have motivated the experimental study of heavy ion collisions. The heavy ion collisions are the only possibility to produce and study the nuclear matter at high temperature and high density in laboratory. I present notion of phase transitions before introducing the phase diagram of nuclear matter and the deconfined phase of the matter called Quark Gluon Plasma (QGP).

The time evolution and the geometry of the heavy ion collision are discussed in the second part, and I will explain also why we need comparison between proton-proton, proton-Ion and Ion-Ion collisions. Then, the main observables and QGP signatures usually studied in Heavy-Ion collisions experiments are presented.

In the last part, the relativistic heavy ion experiments at SPS , RHIC and LHC are presented. The main results and the understanding evolution of the high temperature and high density nuclear matter are discussed.