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First results about elliptic flow with a unified approach at RHIC energies

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The parton model, proposed by Richard Feynman in 1969, can describe the structure of hadrons (like as protons and neutrons) and model hadrons at high energy. We use the parton model in the Standard Model (SM) to explain hadrons by the way of Quantum Chromodynamics . Hadrons are described as bound states of partons (quarks and gluons). We cannot observe directly partons because they are confined in hadrons. We call the phenomena where partons become hadrons : the hadronization. For the moment we have no explications about how partons become hadrons. SM predict one state where partons are deconfined, this state is called Quarks-Gluons-Plasma (QGP).
To study the QGP, we make particles collisions at very high energy in the Large Hadron Collider (LHC) or in the Relativistic Heavy Ions Collider (RHIC). As the QGP life-time (10e−21 s) and size (10e−15 m) are really small in these experiments, we cannot study directly the QGP. Therefore, proving the existence and describing the properties of the QGP is a challenge. Experimentally, we only know the initial and final conditions. To have access between these two states, we must have some models and theoritical concepts to explain how we can make particles.
One approch to explain experimental data is the Parton-Based-Gribov-Regge Theory, this Theory combining the model parton with Gribov-Regge Theory. In a collision (nucleus-nucleus by example), we assume that each interaction can be replaced by a Pomeron. An individual scattering can be referred to as Pomeron, identified with a parton ladder, eventually showing up as flux tubes (or strings). Each string follows the Lund Model where we can split strings with a pair of quarks-antiquarks (the antiparticle of quark) by the Schwinger Mechanism. Between two nuclei, we possed a lot of strings, we make a separation core-corona to make QGP or hadronization of particles.
At very high collision energy, EPOS has proved its efficacity for a large number of observables. I want to test EPOS now at less high energy. I will show first results in elliptic flow with EPOS at p
sNN = 19.6 or 39 GeV.

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