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**Run-13 Au+Au : The HFT perspective**

# Introduction

STAR management has proposed that the second priority in Run-13 be a low-energy point - proposed 14.6 GeV - instead of a 200 GeV engineering run for HFT. This decision is mainly driven by the desire to fill in another low energy point for BES. This is of course not our preferred action so we present below a short position paper on the HFT point of view: how this would affect our capability and what we can learn, and argue for a run at full 200 GeV energy.

# Impact on the Engineering Run Goals

The HFT group is planning and preparing to install several fully instrumented PIXEL sectors in the experiment for the next run, Run-13, which is the only available opportunity for an engineer test before full system installation next year. The main goal for this run is system verification and correction; this includes the study of the collision environment, detector response, backgrounds, operational experience and first look at basics detector performance. At the same time, assuming good performance and data integrity, we could be able to attempt the extraction of some charm physics. The group to this end has carried out several simulation studies. As it becomes immediately obvious, most of these goals will be compromised by a low energy run.

* We will not be able to test the sensors in the high multiplicity environment of Au+Au 200 GeV collisions.
* We will not be able to study the background radiation at our working position (a couple of cm from the beam line). This includes Halo but also the UPC electrons. Dark current (radiation) and Hit density studies will have to wait for the full system installation and operation next year.
* Most collisions will be not useful due to poor beam properties at low energy and definitely outside +-10 cm PIXEL acceptance due to poor vertex position trigger performance at very low multiplicities. At the same time the TPC - determined event vertex will have about four times worse resolution at 14.6 GeV than at 200 GeV thus the reconstruction parameters, in terms of rates and resolution, and their study will rapidly deteriorate.

Having said that we think that there are certain things we can learn from a engineering run at the proposed energy, but that would be much less optimal that a run at the desired full energy of 200 GeV. By having the system test performed at a much lower energy, i.e. much different environment than the anticipated one next year, when the full system is installed, we believe we introduce an extra risk for unforeseen trouble at full system commissioning. This, in turn, might introduce further delays in delivering the Physics of HFT in a highly competitive environment at RHIC and CERN. We are not sure if the Collaboration really wants to take that risk.