Contribution ID: **889** Type: **Poster**

The onset of light and heavy meson quenching in small systems

Wednesday 6 April 2022 18:54 (4 minutes)

Ultra-relativistic collisions of small nuclear systems can shed light on the onset of QGP formation. So far, proton-nucleus (p+A) and deuteron-nucleus (d+A) collisions have been used to study the emergence of the smallest QGP droplets, producing the puzzling results that the non-zero elliptic flow of hadrons at intermediate transverse momenta is not correlated to the suppression of their spectra. An oxygen-oxygen (O+O) run at the LHC will provide a unique opportunity to investigate in detail the onset of jet quenching, differentiate between models of energy loss, and flesh out the differences between light parton and heavy quark dynamics over small length scales. We present the first calculation of heavy meson suppression and elliptic flow at moderate and high p_T in O+O reactions from medium-induced scaling violations in QCD and compare to the corresponding light hadron observables. The theoretical approach that we employ goes beyond traditional energy loss phenomenology and bridges the gap between high energy and nuclear physics. The nuclear modification is found to be surprisingly large up to transverse momenta of order 100 GeV. We finally discuss the implications of our results, should they be confirmed by the future LHC measurements, for the interpretation of the p+A data.

Primary authors: VITEV, Ivan; KE, Weiyao (Los Alamos National Laboratory)

Presenter: KE, Weiyao (Los Alamos National Laboratory)

Session Classification: Poster Session 2 T04_2

Track Classification: Jets, high-pT hadrons, and medium response