Synopsis: In what way are QGP like effects in small systems related to each other?

The "discovery" of the QGP in the collisions of gold-gold or lead-lead nuclei at RHIC and LHC was based on the unifying explanation of many physical phenomena—jet quenching, multi-particle long-rage flow correlations, strangeness enhancement, etc. In recent years, QGP like observations have appeared to manifest themselves also in small systems. With respect to increasing multiplicities in these systems, some important examples are stronger long range $\Delta\eta$ correlations, real values of multi-particle flow cumulants, an enhancement in strangeness production relative to non strange hadrons, elliptic flow of heavy flavour, and increasing mid p_T baryon to meson ratios. However, at the same time some of typical dense QCD medium effects, e.g. jet-quenching or heavy flavour R_{AA} suppression, have not been yet observed.

Whether these observations in smaller systems are consistent with the onset of hydrodynamic behavior and thermalization via a shortly formed QGP, or can be explained by other QCD processes that do not require the existence of a QGP, is a critical debate in our community. The main purpose of this session is to discuss how all of these experimental observations can be related to each other in a consistent theoretical framework, and to propose future measurements or calculations that could solidify an interpretation of these observations.

To this end, some specific questions we would like to raise are as follows:

1. What is the expected multiplicity dependence of bulk observables sensitive to the collective flow (e.g. v_n, $\langle p_{\mathrm{T}} \rangle$ and femtoscopic radii) in hydrodynamic and other descriptions, and how do they compare to the data? What physical constrains on the system evolution (volume, life-time, initial temperature) does such comparison impose?

2. How do the timescales of chemical equilibration and kinetic equilibration of heavy flavour relate to the timescales necessary to generate values of v_n close to that of the data?

3. The existence of a hydro-like expansion in small systems would imply a small mean free path, and possible jet quenching effects. Are the current null results regarding searches for jet quenching consistent with the decreased of QGP space-time volume? What new intermediate and high p_{T} measurements (and calculations) can be proposed to probe such a thing?

4. What is role of collective effects on hadronization in small systems? Do we see evidence for quark coalescence, or is radial flow alone sufficient to describe things like enhanced baryon to meson ratios?