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Soft probes of the quark gluon plasma in ATLAS

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Measurements of low-pT (< 5 GeV) particle production have provided valuable insight on the production and evolution of the quark-gluon plasma in Pb+Pb collisions at the LHC. In particular, measurements of elliptic and higher order collective flow imprinted on the azimuthal angle distributions of low-pT particles directly probe the strongly-coupled dynamics of the quark gluon plasma and test hydrodynamic model descriptions of its evolution. The large acceptance of detectors like ATLAS have made it possible to measure flow event-by-event and to determine the correlations between different harmonics. Recent measurements of low-pT particle production and multi-particle correlations in proton-lead collisions have shown features similar to the collective flow observed in Pb+Pb collisions. Results will be presented from a variety of single and multi-particle measurements in Pb+Pb and proton-Pb collisions that probe the collective dynamics of the quark gluon plasma and possibly provide evidence for collectivity in even small systems.

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