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System size and flavor dependence of chemical freeze-out in relativistic particle collisions from RHIC-BES to LHC energies GABRIELLE OLINGER, RENE BELLWIED, FERNANDO FLOR, University of Houston — The Statistical Hadronization Model (SHM) has been tested to adequately reproduce hadronic particle abundances over nine orders of magnitude in high energy collisions of heavy ions. Experimental particle yields at RHIC and the LHC are used in determining freeze-out parameters of the QCD phase diagram via thermal fits in the SHM framework. When comparing extracted freeze-out parameters obtained using different sets of particles in the thermal fit, differences in the chemical freeze-out temperature arise between light and strange hadrons. In this talk, I will show recent calculations of freeze-out parameters using particle yields from STAR and ALICE collisions at $\sqrt{s_{NN}}$ = 7.7 GeV - 7.0 TeV. Using the Grand Canonical approach within the Thermal FIST HRG model, I will show evidence for a flavor-dependent freeze-out in the QCD crossover region and compare to lattice calculations. Lastly, I will compare the quality of fits across various treatments of strangeness conservation under different freeze-out conditions. With the same approach applied to pp and pPb collisions, I will show that the SHM is applicable to small systems and that flavor dependencies in the freeze-out parameters lead to a natural explanation of strangeness enhancement from small to large systems.

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