Statistical hadronization models

We perform an unbiased statistical analysis of hadron yields and ratios in heavy-ion collisions. There are currently many conflicting statistical hadronization models, and a variety of proposed best-fit parameters. We seek to clarify this picture, particularly the controversial phase-space occupancy factors (γ_q, γ_s).

The statistical hadronization model of choice is *Statistical Hadronization with Resonances* (SHARE), which uses a grand-canonical ensemble approach to calculate hadron yields or ratios given a set of input parameters. We go beyond standard χ^2 minimization routines; notably, we employ a more flexible Markov chain Monte Carlo (MCMC) approach.

[J. E. Bernhard, C. E. Coleman-Smith, and S. A. Bass]

Onion visualization

We visualize hadronic freeze-out surfaces as a function of strangeness in heavy-ion collisions. It is well known that particles with more strangeness have smaller cross sections, and therefore cease to interact earlier in the post-QGP expansion. Perhaps the most fundamental set of freeze-out surfaces are those of the baryons Ω, Ξ, Λ, p. When these surfaces are superimposed, the visual takes on a layered appearance, hence the name of the project ("onion").

We extend the visualization to include time dependence. The animation begins with an interacting QGP phase, from which the freeze-out surfaces of the various baryons form as the medium expands and cools.

[J. E. Bernhard, H. Petersen, and S. A. Bass]