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Abstract for an Invited Paper  
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**Thermodynamics of strongly interacting elementary particles**

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We discuss progress made in studies of the thermodynamics of strongly interacting matter through lattice simulations of QCD. We present results on the QCD equation of state obtained with almost physical light and strange quark masses and discuss fluctuations and correlations of conserved charges in matter with vanishing net baryon number density. We, furthermore, will review recent studies of transport coefficients on the lattice as well as attempts to determine the elusive critical point expected to exist in the QCD phase diagram at non-zero baryon number density.