Dipartimento di Fisica e Astronomia Galileo Galilei

Università degli Studi di Padova

COLLOQUIUM DI FISICA

Lunedì 21 maggio 2018, ore 15.30
aula "A. Rostagni"

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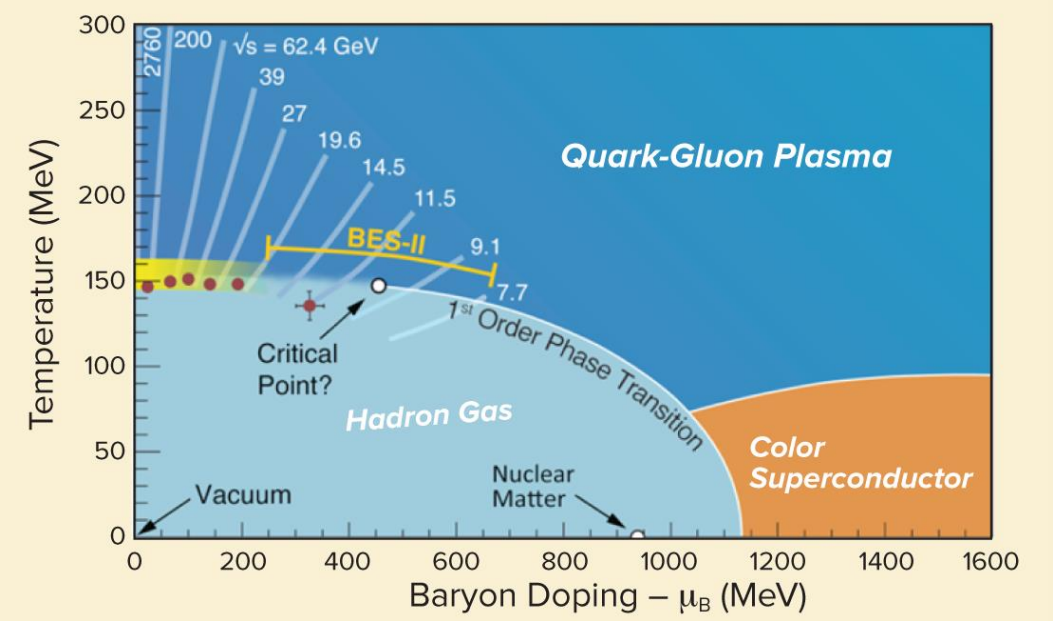
"Doping and Probing the Original Liquid"



Heavy ion collisions reproduce droplets of the trillions-of-degrees-hot liquid that filled the microseconds old universe, called quark-gluon plasma (QGP). This liquid was the first complex matter to form, as well as the source of all protons and neutrons. After a look at what we have learned about the formation and properties of this liquid in heavy ion collisions, I will focus on the road ahead. I will frame questions that motivate experimental measurements coming soon, including: How does the hydrodynamics and thermodynamics of liquid QGP change as it is doped with an excess of quarks over antiquarks? Is there a critical point in the region of the QCD phase diagram as a function of temperature and doping that heavy ion collisions can explore, or do all collisions that make QGP only explore a crossover in the phase diagram? How does a strongly coupled liquid emerge when QGP is analyzed with a spatial resolution of order 1/T or coarser, given that because QCD is asymptotically free what you will see at much finer resolution is weakly coupled quarks and gluons? How can we used jets to see the inner workings of QGP and answer this question?