

Abstract Submitted  
for the Graduate Seminar PHY599 Meeting of  
The American Physical Society

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**The Phase Diagram of Nuclear Matter** TAO SUN, State University of New York at Stony Brook, Stony Brook, NY — With the establishment of the quantum chromodynamics and the standard model, people are now exploring different phases of nuclear matter. These efforts include running huge colliders (RHIC, ALICE) and doing complicated simulations with lattice gauge theory. Research in this area will hopefully give answers to many fundamental problems in physics. The first part of the talk is a brief review on the quark model and phase diagrams in general. Then the basic properties of vacuum QCD: quark confinement and asymptotic freedom is introduced. The bag model will serve as a prototype. Simple thermodynamic reasoning is used to explain why a new phase, Quark Gluon Plasma will form at the temperature of 170MeV. Some basic properties of QGP are presented together with their experimental observations. At last a short discussion on quark matter and color superconductivity will be given.

**References:**

1. S. Hands, The Phase Diagram of QCD, *Contemporary Physics*, 42,4, 209-225, (2001).
2. T Schäfer, Quark Matter, arXiv:hep-ph0304281.

Prefer Oral Session  
 Prefer Poster Session

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Date submitted: March 27, 2006

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