

STAR Physics Program and Technical Challenges
with the RHIC Energy Scan with Au+Au Collisions

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The future STAR physics program includes a Au+Au energy scan extending to low $\sqrt{s_{NN}}$. Among other things, this energy scan will provide a unique opportunity to search for the QCD phase boundary and a key landmark, a possible critical point, in the phase diagram. Due to its large uniform acceptance and (with the addition of the TOF barrel) excellent PID, by the time of Run 10 (in 2010) STAR will be uniquely positioned to cover this physics in unprecedented depth and detail, as well as other novel physics possibilities. Running at very low energies poses major new challenges for accelerator experts at RHIC and for physicists preparing for data taking. We report on the status of work to address challenges faced by STAR collaboration (e.g. triggering and beam rejection capabilities, reaction plane determination, effects of PID contamination on physics observables), including selected results from tests of low energy RHIC runs with Au (in 2001 and 2007) and Cu (in 2004).