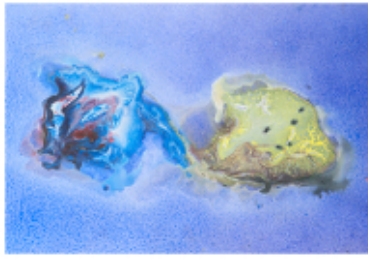


Quark Confinement and the Hadron Spectrum XI



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The JLab Eta Factory (JEF) Experiment

Tuesday 9 September 2014 14:20 (18 minutes)

Decays of the η meson provide a unique, flavor-conserving laboratory to probe the isospin violating sector of low energy QCD and search for new physics beyond the Standard Model. The JEF Experiment has been developed in Hall D at Jlab to measure η decays emphasizing on rare neutral modes with two orders of magnitude background reduction compared to the previous experiments. The projected results will have profound physics impact: the $\eta \rightarrow B\gamma \rightarrow \pi^0\gamma\gamma$ decay provides a stringent constraint on a dark leptophobic gauge boson (B) coupled to baryon number in 140-550 MeV mass range; C-violating η decays offer the best window for direct constraint on C-violating and P-conserving (CVPC) new physics; the Dalitz distribution of $\eta \rightarrow \pi^0\gamma\gamma$ probes interplay of vector & scalar meson resonances in ChPT; $\eta \rightarrow 3\pi$ will offer an improvement in the uncertainty of the light quark mass ratio. The detail of the experiment will be presented.

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