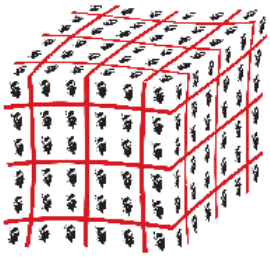

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Poisson statistics in the high temperature QCD Dirac spectrum

Thursday, 17 June 2010 15:10 (20 minutes)

In the epsilon regime of QCD the low-end of the Dirac spectrum is described by random matrix theory. In contrast, there has been no similarly well established staistical description in the high temperature, chirally symmetric phase. Using lattice simulations I show that at high temperature a band of extremely localized eigenmodes appear at the low-end of the Dirac spectrum. The corresponding eigenvalues are statistically independent and obey a generalized Poisson distribution. Higher up in the spectrum the Poisson distribution rapidly crosses over into the bulk distribution predicted by the random matrix ensemble with the corresponding symmetry. My results are based on quenched lattice simulations with the overlap and the staggered Dirac operator done well above the critical temperature at several volumes and values of N_t. I also discuss the crucial role played by the fermionic boundary condition and the Polyakov-loop in this phenomenon.

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talk

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