Contribution ID: **88**   Type: **not specified**

QCD with one flavor and the sign problem at fixed theta-angle

Friday, 21 February 2014 11:00 (30 minutes)

Random matrix theory has had a significant impact on our understanding of the sign problem and nonzero baryon chemical potential. Among others it has explained the nature of the quenched approximation, the relation between Dirac spectra and the sign problem, the Silver Blaze problem and the microscopic Dirac spectrum. Perhaps the most surprising result from random matrix theory is that the discontinuity of the chiral condensate requires an alternative of the Banks-Casher formula. This mechanism occurs both in random matrix theory and one-dimensional QCD and in this lecture we discuss the universality of this mechanism for chiral symmetry breaking. Relations with the sign problem at nonzero θ-angle are discussed.

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