

Nuclear Theory

matter?

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We argue that a so far neglected dimensionless scale, the number of neighbors in a closely packed system, is relevant for the convergence of the large \$N c\$ expansion at high chemical potential. It is only when the number of colors is large w.r.t. this new scale (\$\sim \order{10}\$) that a convergent large \$N_c\$ limit is reached. This provides an explanation as to why the large \$N_c\$ expansion, qualitatively successful in in vacuum QCD, fails to describe high baryo-chemical potential systems, such as nuclear matter. It also means that phenomenological claims about high density matter based on large \$N_c\$ extrapolations should be treated with caution.

How large is "large \$N_c\$" for Nuclear

Comments: Proceedings of CPOD2010 conference, in Dubna. Results based on Phys.Rev.C82, 055202 (2010), this http URL

Nuclear Theory (nucl-th); High Energy Physics - Phenomenology (hep-ph) Subjects: arXiv:1101.0149v1 [nucl-th] Cite as:

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