

## The phase diagram in T- $\mu$ -N<sub>c</sub> space

We argue that a so far neglected dimensionless scale, the number of neighbors in a closely packed system (N<sub>n</sub>, N<sub>n</sub>~10 in our world), is relevant for the convergence of the large number of colors (N<sub>c</sub>, N<sub>c</sub>=3 in our world) expansion at large chemical potential.

Using a highly simplified but universal model, we demonstrate that the N<sub>c</sub>≫N<sub>n</sub> limit is qualitatively different from our world's N<sub>c</sub>≪N<sub>n</sub>. In particular, the relationship between deconfinement and percolation, and the in-medium modification of baryonic wavefunctions, are very different in these two regimes.

We explore phenomenological consequences of these findings, particularly in regard to the new "Quarkyonic" phases conjectured from large N<sub>c</sub> arguments and the problem of chiral symmetry breaking at high chemical potential

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