

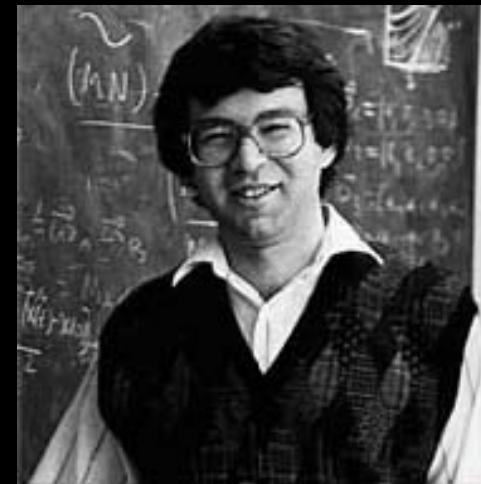
Theory Seminar

Monday, January 25, 2010 2:10 PM 831 Pupin Hall

Baryonic Chemical Potential in AdS/CFT



We review the example of AdS/CFT correspondence coming from considering the gauge theory on the stack of D3-branes placed at the tip of the conifold. We then present new 3-brane solutions describing the "conifold gauge theory" at nonzero temperature and baryonic chemical potential. These solutions are asymptotic to the product of 5-d Anti-de Sitter space and the Einstein space $T^{1,1}$, the base of the conifold. The baryon number is carried by D3-branes wrapping the topologically non-trivial 3-cycle in $T^{1,1}$. Of particular interest is the low-temperature limit where we find a new kind of weakly curved near-horizon geometry; it is a warped product $AdS_2 \times R^3 \times T^{1,1}$ with warp factors that are powers of the logarithm of the AdS radius. Thus, our solution encodes a new type of emergent quantum near-criticality.



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