Prospects in Theoretical Physics Program

Institute for Advanced Study

SPECIAL SEMINAR
Thursday, July 19, 2007
by
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Warped Conifolds and Their Applications to Cosmology

The talk begins with a summary of the SU(N)xSU(N) superconformal gauge theory that arises on a stack of D3-branes at the tip of the conifold, and of its AdS dual. Giving an expectation value to one of the chiral superfields in the gauge theory makes it flow to the N=4 SYM theory. The recently found supergravity dual of this flow, a warped resolved conifold, is presented.

Another deformation, corresponding to adding wrapped D5-branes at the tip of the conifold, produces a cascading gauge theory which exhibits confinement at low energies. This theory has a `baryonic branch' where certain baryonic operators condense. The family of warped throat solutions dual to the baryonic branch is discussed. Embedding of such warped throats into flux compactifications leads to cosmological models where a D3-brane coordinate plays the role of the inflaton.

Non-pertubative corrections to the inflaton potential due to a stack of D7-branes in the throat are calculated. A recent explicit construction raises the possibility of inflation near an inflection point.

4:30 p.m.
Wolfensohn Hall