

# JOINT TUFTS/MIT COSMOLOGY SEMINAR

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## *Effects of a Thermal Bath of Photons on Embedded String Stability*

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We compute the corrections of thermal photons on the effective potential for the linear sigma model of QCD. Since we are interested in temperatures lower than the confinement temperature, we consider the scalar fields to be out of equilibrium. Two of the scalar fields are uncharged while the other two are charged under the  $U(1)$  gauge symmetry of electromagnetism. We find that the induced thermal terms in the effective potential can stabilize the embedded pion string, a string configuration which is unstable in the vacuum. Our results are applicable in a more general context and demonstrate that embedded string configurations arising in a wider class of field theories can be stabilized by thermal effects. Another well-known example of an embedded string which can be stabilized by thermal effects is the electroweak  $Z$ -string. We discuss the general criteria for thermal stabilization of embedded defects.

Tuesday, February 12, 2013, 2:30 pm

Cosman Seminar Room

Center for Theoretical Physics

Building 6C, Room 6C-442