

Joint CQSE and CASTS Seminar

Weekly Seminar
Apr. 11, 2014 (Friday)

TIME Apr. 11, 14:30 ~ 15:30
TITLE A Holographic model of the Kondo effect
SPEAKER Dr. Jackson Wu
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PLACE Rm716, CCMS & New Physics Building, NTU

Abstract

We propose a model of the Kondo effect based on the AdS/CFT correspondence. The Kondo effect is the screening of a magnetic impurity coupled anti-ferromagnetically to a bath of conduction electrons at low temperatures. Our holographic model, which combines the CFT and large- N descriptions, is a Chern-Simons gauge field in (2+1)-dimensional AdS3 space, dual to the Kac-Moody current, coupled to a holographic superconductor along an AdS2 subspace. Our model exhibits several characteristic features of the Kondo effect, including a dynamically generated scale, a resistivity with power-law behavior in temperature at low temperatures, and a spectral flow producing a phase shift. Our holographic Kondo model may be useful for studying many open problems involving impurities, including for example the Kondo lattice problem.

