

ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

PHYSICS COLLOQUIUM

Thursday, 10 March 2016

17:00 -18:00

3rd Floor Seminar Room

"Aspects of strong coupling in quantum field theory"

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Abstract

After a brief historical review of some of the key advances in the framework of quantum field theory, I will outline some of the most pressing questions that are technically and conceptually important in diverse physical applications. Many of these questions are directly related to our ability to formulate and solve complicated quantum mechanical systems beyond perturbation theory at finite strength of interaction. I will summarise some of the characteristic lessons that are coming out of modern studies of supersymmetric quantum field theory and string theory, emphasising aspects that challenge or extend traditional approaches. A particular example will be discussed where recent advances allow us to compute analytically certain aspects of the non-abelian Berry phase in (3+1)-dimensional supersymmetric conformal field theories, and determine their implications for an all-out complete solution of a subclass of highly non-trivial correlation functions.