

AMO/QO PIZZA LUNCH SEMINARS

"Non-relativistic Scale Anomaly via Path Integrals"

Dr. Chris Lin

University of Houston

ABSTRACT

We discuss from a path-integral point of view the scale anomaly with the goal of studying the anomaly's vacuum and many-body effects on 2-dimensional ultra-cold atoms. Within the path-integral formalism, anomalies are the result of a Jacobian from the change of measure due to a symmetry transformation---this approach, pioneered in 1979 by Fujikawa, has been successfully employed in relativistic field theories. We use it to describe anomalous corrections to the virial theorem in non-relativistic field theories.

" Anderson Localization for strong disorder: Analytical results"

Dr. Hichem Eleuch

McGill University, Montreal

ABSTRACT

Anderson localization has been explored extensively in the last five decades and has been observed in different systems, including electrons, photons and atoms. It has opened the door for many applications in random lasing, photonic crystals, quantum information, biological systems and cosmology. All these systems share a common wave equation, Schrodinger like equation. The analytical results in this field are limited to the low disorder, where perturbative approaches are used to disordered potentials. We have shown that the localization behavior of the standard disordered wave equation can be computed for all disorder strengths correlation lengths by solving analytically a nonlinear wave equation, whose average over disorder yields the localization properties of the desired linear wave equation. Our results, explain the origin of the difficulty to observe localization in certain physical systems.

Wednesday, March 9, 2016

IQSE 578, 12:30 Noon

Mitchell Physics Building

Institute for Quantum Science and Engineering
Texas A&M University

(Pizza, salad, and soda to be served at 12:00 noon)