

Plenary Talk

PV VII Wed 9:00 e415

Smoking guns of Anderson localization — •DOMINIQUE DELANDE — Laboratoire Kastler-Brossel, Université Pierre et Marie Curie et Ecole Normale Supérieure, Paris, France

Because their internal as well as their external degrees of freedom can be very well controlled, cold atoms make it possible to experimentally study a number of fundamental physical processes for quantum disordered systems or few/many-body interacting systems, such as ballistic/diffusive transport, and phenomena due to quantum interference

between multiple scattering paths, such as weak localization, coherent back-scattering and strong (a.k.a. Anderson) localization. In traditional disordered systems such as electrons in solid state samples, localization properties are probed by measuring a transport coefficient such as conductivity. In cold atomic samples, usually not at thermal equilibrium, other tools must be used. I will show how signatures or "smoking guns" of Anderson localization can be observed with cold atoms and which relevant physical information can be extracted from these signatures.