

Joint CQSE and CASTS Seminar

Weekly Seminar
Feb. 24, 2012 (Friday)

TIME Feb. 24, 14:30 ~ 15:30
TITLE Improved master equation approach to quantum transport:
From Born to self-consistent Born approximation
SPEAKER Prof. Xin-Qi Li
Department of Physics, Beijing Normal University
PLACE Rm716, CCMS & New Physics Building, NTU

Abstract

Beyond the second-order Born approximation, we develop an improved master equation approach to quantum transport by virtue of a self-consistent Born approximation. The basic idea is replacing the free Green's function in the tunneling self-energy by an effective reduced propagator under the Born approximation. We found that the effect of this improvement is remarkable. For instance, completely beyond the scope of the conventional second-order master equation, the new approach can not only recover the exact result of noninteracting transport under arbitrary voltages, but also predict the challenging nonequilibrium Kondo effect. In addition to having an elegant structure, the application convenience and accuracy of the proposed scheme, as demonstrated by a couple of examples, suggest it a useful tool for quantum transports.

