New technology could open the door for quantum transport by incorporating incoherent scattering

Track Code: 2018-KUBI-68162

Categories:
- Computer Technology

Keywords:
- Computer Technology
- Incoherent Scattering
- Quantum
- Transportation

Of all the particle modeling methods, the Green's function method is the most common and widely accepted. The Buttiker probes were invented in the 1980s and just now became fully compatible with the Green's function method. These existing particle modeling tools commonly ignoring incoherent scattering. They also suffer from massive numerical loads which results in limitations on the solvable systems. There is a clear need for a new technology that can incorporate incoherent scattering so these limitations can be lifted.

Researchers at Purdue University have developed a new technology that allows someone to model the dependent and conserved quantity exchanging many particle systems. This is possible because this technology includes a dynamic mutual interaction with the environment and the other particle systems. These happen in the Buttiker probes. This is achieved by avoiding the very expensive self-consistent Born approximation. This new technology could open the door for quantum transport by incorporating incoherent scattering.

Advantages:
-Includes dynamic mutual interaction
-Avoids using Born approximation
-Less expensive
™

Potential Applications:
-Incoherent scattering
-Quantum transport

People:
- Kubis, Tillmann C (Project leader)
- Chu, Yuanchen
- Wang, Kuang-Chung

Intellectual Property:

Application Date: August 13, 2019
Type: Utility Patent
Country of Filing: United States
Patent Number: (None)
Issue Date: (None)

Application Date: August 13, 2018
Type: Provisional-Patent
Country of Filing: United States
Patent Number: (None)
Issue Date: (None)

Contact OTC:

Purdue Office of Technology Commercialization
The Convergence Center
101 Foundry Drive, Suite 2500
West Lafayette, IN 47906

Phone: (765) 588-3475
Fax: (765) 463-3486
Email: otcip@prf.org