1st International Conference on Sustainable Energy Systems
24, 25 and 26 April 2025, Morocco (Online)

Special Topic

Quantum Energy Teleportation on a Quantum Computer

Songbo Xie, Manas Sajjan, and Sabre Kais [1,*]

Prof. Sabre Kais

[1] *Goodnight Distinguished Chair in Quantum Computing*
**Emeritus Distinguished Professor of Chemistry and ECE at Purdue University*
https://ece.ncsu.edu/people/skais/
Department of Electrical and Computer Engineering,
North Carolina State University, Raleigh, North Carolina 27606, USA

Summary:

We explore recent advancements in the understanding and manipulation of vacuum energy in quantum physics, with a focus on the quantum energy teleportation (QET) protocol. We propose an enhanced QET protocol that incorporates an additional qubit, enabling the stored energy to be stored within a quantum register for future use. We experimentally validated this enhanced protocol using IBM superconducting quantum computers, demonstrating its feasibility and potential for future applications in quantum energy manipulation.