

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Reversible heat flow through the carbon tube junction SERHII SHAFRANJUK, Northwestern University — Microscopic mechanisms of the externally controlled reversible thermoelectric effect through the carbon tube junction (NJ) are examined theoretically. The theory [1] interprets earlier experiments in terms of ballistic motion the phase-correlated electrons (e) and holes (h) along the tube section T. We find that the direction and magnitude of the heat flow critically depend on the gate voltage V_G and on the source-drain voltage V_{SD} , both. The voltages adjust the electron energy ε to match the quantized state and van Hove singularities inside T. Potential applications of the reversible Peltier effect are discussed.

[1] S. Shafraniuk, EPL, 87 (2009) 57007

Serhii Shafranjuk
Northwestern University

Date submitted: 27 Nov 2009

Electronic form version 1.4