

*Full Paper*

## Thermal entanglement and quantum information processing

Guo-Feng Zhang<sup>1</sup>, Shu-Shen Li<sup>1,\*</sup>

1 Department of physics, School of sciences, Beijing University of Aeronautics and Astronautics, Xueyuan Road No. 37, Beijing 100083, China

E-mail: gf1978zhang@buaa.edu.cn.

2 State Key Laboratory for Superlattices and Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, P. O. Box 912, Beijing 100083, China

E-mail: sslee@red.semi.ac.cn

\* Author to whom correspondence should be addressed.

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**Abstract:** The origin and functions of thermal entanglement in solid state system is introduced. It is emphasized that the effects of spin-spin and spin-orbit interaction on thermal entanglement. Quantum state teleportation based on thermal entanglement quantum channel is also covered. The variation of the efficiency with the thermal entanglement in a thermal entangle quantum engine is discussed.

**Keywords:** Thermal entanglement, Quantum state teleportation, Thermal entangled quantum engine

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