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个人简历

胡涛涛，理学博士，副教授，博士生导师。研究方向为研究方向为量子信息，量子多体性质，多体局域化相变。在相关研究方向取得了一系列的研究成果，至今以第一或通讯作者发表SCI文章20余篇。并作为项目负责人完成国家自然科学基金，吉林省科技厅基金等项目。

2001.09-2005.07， 东北师范大学物理学院， 物理学， 理学学士

2005.09-2011.07， 东北师范大学物理学院， 凝聚态物理， 理学博士

2011.07-2017.06， 东北师范大学物理学院， 理论物理， 讲师

2017.06-至今 东北师范大学物理学院， 理论物理， 副教授

2014.10-2015.10， 南加州大学 (美国)， 访问学者

社会兼职

获奖情况

2015-10-20 吉林省自然科学学术成果奖二等奖

教学信息

改变世界的物理学

普通物理B：热学

普通物理A：电磁学

普通物理B：电磁学

科研信息

【主要科研成果】

1. Haoyue Li, Taotao Hu*, Kang Xue, Hui Zhao, Xiaodan Li, Shuangyuan Ni, Jiali Zhang, Hang Ren, Many-body localization of Haldane-Shastry model with periodic driving, International Journal of Theoretical Physics.60, 2066–2073 (2021).

2. Hui Zhao, Taotao Hu*, Kang Xue, Haoyue Li, Xiaodan Li, Shuangyuan Ni, Jiali Zhang, Hang Ren, The Behavior of Many-body Localization in the Periodically Driven Heisenberg XXX Model, International Journal of Theoretical Physics. https://doi.org/10.1007/s10773-021-04843-8 (2021).

3. Yining Geng, Taotao Hu*, Kang Xue, Haoyue Li, Hui Zhao, Xiaodan Li, Hang Ren, Many-Body Localization Transition in the Heisenberg Ising Chain, International Journal of Theoretical Physics. 59, 1330–1337 (2020).

4. Ren, H.; Hu, T*. A Local Neighborhood Robust Fuzzy Clustering Image Segmentation Algorithm Based on an Adaptive Feature Selection Gaussian Mixture Model. Sensors. 20, 2391 (2020).

5. Zhi wei Liu, Xiaodan Li, Congcong Zhou, Taotao Hu, LiYao Zhang, Ruixia Niu, Yue Guan, Ningxia Zhang. First-principles study of structural and electronic properties of substitutionally doped arsenene. Physica E. 119, 11408 (2020).

6. Congcong Zhou, Xiaodan Li, and Taotao Hu, Structural and Electronic Properties of Heterostructures Composed of Antimonene and Monolayer MoS2, Nanomaterials. 10, 2358 (2020).

7. Yue Guan, Xiaodan Li, Ruixia Niu, Ningxia Zhang, Taotao Hu and Liyao Zhang， Tunable Electronic Properties of Type-II SiS2/WSe2 Hetero-Bilayers, Nanomaterials. 10, 2037 (2020)

8. Ren, H.; Hu, T. An Adaptive Feature Selection Algorithm for Fuzzy Clustering Image Segmentation Based on Embedded Neighbourhood Information Constraints. Sensors, 20, 3722 (2020).

9. Ren, H.; Hu, T. A Local Neighborhood Robust Fuzzy Clustering Image Segmentation Algorithm Based on an Adaptive Feature Selection Gaussian Mixture Model. Sensors, 20, 2391 (2020).

10. Ren Hang; Hu Tao Tao; Driving circuitry of a full-frame area array charge-coupled device (CCD) supporting multiple output modes and electronic image motion compensation, Instrumentation Science & Technology,1739069 (2020).

11. Ren Hang; Hu Tao Tao; A general design method for full-frame area array CCD driving sequence generator based on sequence subdivision and finite state machine, Journal of Instrumentation,14(11) (2019).

12. Ren Hang; Hu Tao Tao; Design of a high frame rate driver circuit for a 22 M-pixel high-resolution large-area array CCD camera and its nonuniformity correction, Optical Engineering, 58(8) (2019).

13. Ren Hang; Hu Tao Tao; Song Yu long; Sun hui; Liu Bo Chao; Gao Ming He;An Improved Electronic Image Motion Compensation (IMC) Method of AerialFull-Frame-Type Area Array CCD Camera Based on the CCD Multiphase Structure andHardware Implementation, Sensors, 18(2632) (2018).

14.Taotao Hu，Kang Xue, Xiaodan Li, Yan Zhang, Hang Ren, “Excited-state fidelity as a signal for the many-body localization transition in a disordered Ising chain”, Scientific Reports, 7, 577 (2017).

15.Taotao Hu，Kang Xue, Xiaodan Li, Yan Zhang, Hang Ren, “Fidelity of the diagonal ensemble signals the many-body localizationtransition” Phys.Rev.E 94, 052119 (2016).

16.Taotao Hu，Kang Xue, Xiaodan Li, Yan Zhang, Hang Ren, “Quantum phase transition, quantum fidelity and fidelity susceptibility in the Yang-Baxter system, Quantum Information Processing, 16(1) 21-1-9, (2017).

17.Taotao Hu, Hang Ren, Kang Xue. The topological basis realization and the corresponding XXX spin-1 chain. Quantum Information Processing, 13(2), 273-282 (2014).

18. Taotao Hu, Hang Ren, Kang Xue. The topological basis expression of Heisenberg spin chain. Quantum Information Processing,13(2),
401-414(2014).

19. Taotao Hu, Hang Ren, Kang Xue. Dirac’s Hamiltonian and Bogoliubov’s Hamiltonian as representation of the braid group. Quantum Information Processing，13(2), 391-399 (2014).

20. Taotao Hu, Kang Xue, Chunfang Sun , Gangcheng Wang, Hang Ren. Quantum Teleportation and Dense Coding via topological basis. Quantum Information Processing 12 (10), 3369-3381 (2013).

21. Taotao Hu, Hang Ren, and Kang Xue, Tripartite Entanglement sudden death in Yang-Baxter systems. Quantum Information Processing, 10, 705-715 (2011).

22. Taotao Hu, C.F Wu, and Kang Xue, Berry phase and Entanglement of three qubits in a new Yang-baxter system. Journal of Mathematical Physics, 50, 083509 (2009).

23.Taotao Hu, Gangcheng Wang, Chunfang Sun, Chengcheng Zhou, Qingyong Wang, and Kang Xue, Method of constructing braid group reprentation and entanglement in a 9×9 Yang-Baxter system. Reviews in Mathematical Physics, 21, 1081-1090 (2009)．

24. Taotao Hu, C.F Sun, and Kang Xue, The sudden death of entanglement in constructed Yang-Baxter systems. Quantum Information Processing, 9, 27-35 (2010).

25. Yan Zhang, Yi-Mou Liu, Hong Yang,Gang-Cheng Wang, Tao-Tao Hu, Chun-Fang Sun, and Tai-Yu Zheng，Phase control of stationary light pulses due to a weak microwave coupling. Optics Communications, 343, 183-187 (2015).

26. Chengcheng Zhou, Kang Xue, Lidan Gou, Chunfang Sun, Gangcheng Wang, and Taotao Hu, Birman-Wenzl-Murakami Algebra, Topological parameter and Berry phase. Quantum Information Processing, 11 (6), 1765-1773 (2012).

27. Chunfang Sun, Gangcheng Wang, Taotao Hu, Chengcheng Zhou, Qingyong Wang, and Kang Xue, The representation of Temperley-Lieb algebra and entanglement in a Yang-Baxter system. International Journal of Quantum Information. 7 (6), 1285-1293

(2009).

28. Chunfang Sun, Taotao Hu, Gangcheng Wang, Chunfeng Wu, and Kang Xue, Thermal entanglement in the two-qubit systems constructed from the Yang-Baxter R matrix. International Journal of Quantum Information. 7 (5), 879-889 (2009).

29. Gangcheng Wang, Kang Xue, Chunfang Sun, Chengcheng Zhou, Taotao Hu, and Qingyong Wang, Temperley-Lieb algebra, Yang-Baxterization and universal gate. Quantum Information Processing, 9 (6), 699-710 (2009).

30. Gangcheng Wang, Kang Xue, Chunfang Sun, Taotao Hu, Chengcheng Zhou, and Guijiao Du, Quantum phase transition like phenomenon in a two-qubit Yang-Baxter system, International Journal of Theoretical Physics, 49 (10), 2499-2505 (2010).

【主要科研项目】

1. 基于杨-巴克斯特方程的多体量子纠缠特性的研究及其物理应用, 国家自然科学基金委员会， B级， 22万， 2014.01-2016.12， 主持。
2. Yang-Baxter 方程对于多体量子纠缠的特殊性质的研究， 吉林省科学技术厅， C级，6万，2016.01-2018.12， 主持。
3. 基于杨-巴克斯特方程的多体量子纠缠特性的研究及其物理应用， 留学人员科技活动项目择优资助项目，D级，3万元，2015.06—2018.06，主持。
4. 杨-巴克斯特方程在量子传输和量子密码术中的应用， 东北师范大学自然科学青年基金项目， E级， 3万， 2012.01-2013.12， 主持。
5. 相干光驱动的超冷原子系综中光子流的动态量子调控， 国家自然科学基金委员会，B级， 20万， 2013.01-2015.12， 排序第二位。
6. 高维杨-巴克斯特方程研究及其在量子纠缠中的应用， 国家自然科学基金委员会，C级， 23万， 2014.01-2017.12， 排序第四位。
7. 拓扑基的各类实现及相应物理模型的研究，国家自然科学基金委员会，B级， 58万 2012.01-2015.12 ， 排序第五位。
8. 两体量子体系动力学性质与反馈控制的理论研究， 国家自然科学基金委员会，B级， 22万， 2012.01-2014.12， 排序第三位。
9. 动态 Casimir 效应的研究， 国家自然科学基金委，D级，5万， 2014.01-2014.12， 排序第二位。

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