

ALLEGATO B

DICHIARAZIONI SOSTITUTIVE DI CERTIFICAZIONI

(art. 46 D.P.R. n. 445/2000)

DICHIARAZIONI SOSTITUTIVE DELL'ATTO DI NOTORIETÀ

(art. 47 D.P.R. n. 445/2000) ..l... sottoscritt...

COGNOME

NOME _____

NATO A:

ATTUALMENTE RESIDENTE A:

INDIRIZZO

C.A.P. **TELEFONO**

Visto il D.P.R. 28 dicembre 2000, n. 445 concernente "T.U. delle disposizioni legislative e regolamentari in materia di documentazione amministrativa" e successive modifiche ed integrazioni;

Vista la Legge 12 novembre 2011, n. 183 ed in particolare l'art. 15 concernente le nuove disposizioni in materia di certificati e dichiarazioni sostitutive (*);

Consapevole che, ai sensi dell'art.76 del DPR 445/2000, le dichiarazioni mendaci, la falsità negli atti e l'uso di atti falsi sono punite ai sensi del Codice penale e delle leggi speciali vigenti in materia, dichiara sotto la propria responsabilità:

che quanto dichiarato nel seguente curriculum vitae et studiorum comprensivo delle
informazioni sulla produzione scientifica corrisponde a verità

Curriculum vitae et studiorum

studi compiuti, i titoli conseguiti, le pubblicazioni e/o i rapporti tecnici e/o i brevetti, i servizi prestati, le funzioni svolte, gli incarichi ricoperti ed ogni altra attività scientifica, professionale e didattica eventualmente esercitata (in ordine cronologico iniziando dal titolo più recente)

Curriculum Vitae

Education:

- September 2019-June 2023

Doctoral research at Innovation Academy for Precision Measurement Science and Technology (previous name: Wuhan Institute of Physics and Mathematics), Chinese Academy of Sciences, Wuhan, China, supervised by Prof. Xi-Wen Guan. Obtain a Ph.D. in theoretical physics with honors from the University of Chinese Academy of Science. The Ph.D. thesis is "Quantum Entanglement: from Integrable Many-Body Systems to Quantum Technologies".

- September 2018-June 2019

Doctoral program study at the University of Chinese Academy of Sciences, Beijing, China.

- September 2014-July 2018

Bachelor in Physics with honors at Northwest University, Xi'an, China, supervised by Prof. Wen-Li Yang.

Languages and IT Skills:

Mandarin Chinese, English, and MATLAB.

Awards:

- Obtain Ph.D. degree with honors from the University of Chinese Academy of Science, the University of Chinese Academy of Science, 2023.
- National Scholarship for Doctoral Students, Ministry of Education of the People's Republic of China, 2022.
- The President Scholarship of Wuhan Branch of CAS (Chinese Academy of Sciences), Wuhan Branch of CAS, 2022.
- The Third Prize of the Fourteenth Award for Outstanding Natural Science Academic Papers, The People's Government of Shaanxi Province, 2020.
- Graduated with Honors from Northwest University, Northwest University, 2018.
- The First Prize of the Seventh and Eighth National College Students Mathematical Competition, Chinese Mathematical Society, 2015 and 2016.

Citation Records:

Google Scholar: <https://scholar.google.com/citations?user=9sJ6YFwAAAAJ&hl=en>

Total citations: 374.

Publications:

- **H.-L. Shi**, S. Ding, Q.-K. Wan, X.-H. Wang, and W.-L. Yang, Entanglement, Coherence, and Extractable Work in Quantum Batteries, *Phys. Rev. Lett.* 129, 130602, (2022).
- X. Cai, H. Yang, **H.-L. Shi [co-first author]**, C.-H. Li, N. Andrei, and X.-W. Guan, Multi-particle quantum walks and Fisher information in one-dimensional lattices, *Phys. Rev. Lett.* 127, 100406, (2021).
- J.-X. Liu, **H.-L. Shi [co-first author]**, Y.-H. Shi, X.-H. Wang, and W.-L. Yang, Entanglement and work extraction in the central-spin quantum battery, *Phys. Rev. B* 104, 245418 (2021).
- Q.-K. Wan, **H.-L. Shi [co-first author & corresponding author]**, and X.-W. Guan, Quantum-Enhanced Metrology in Cavity Magnomechanics, *arXiv:2305.08045*.
- **H.-L. Shi**, X.-W. Guan, and J. Yang, Universal shot-noise limit for quantum metrology with local Hamiltonian, in preparation.
- **H.-L. Shi**, X.-H. Wang, W.-L. Yang and X.-W. Guan, Understanding quantum batteries from quantum correlations, an invited topical review from *J. Phys. Condens. Matter.*
- P. Lu, **H.-L. Shi**, L. Cao, X.-H. Wang, T. Yang, J. Cao, and W.-L. Yang, Coherence of an extended central spin model with a coupled spin bath, *Phys. Rev. B* 101, 184307 (2020).
- Y.-H. Shi, **H.-L. Shi**, X.-H. Wang, M.-L. Hu, S.-Y. Liu, W.-L. Yang, and H. Fan, Quantum coherence in a quantum heat engine, *J. Phys. A: Math. Theor.* 53, 085301 (2020).
- Q.-K. Wan, **H.-L. Shi**, X. Zhou, X.-H. Wang, and W.-L. Yang, Decoherence dynamics of entangled quantum states in the XXX central spin model, *Quant. Info. Proc.* 19, 400 (2020).
- **H.-L. Shi**, S.-Y. Liu, X.-H. Wang, W.-L. Yang, Z.-Y. Yang, and H. Fan, Coherence depletion in the Grover quantum search algorithm, *Phys. Rev. A* 95, 032307 (2017).
- **H.-L. Shi**, X.-H. Wang, S.-Y. Liu, W.-L. Yang, Z.-Y. Yang, and H. Fan, Coherence transformations

in single qubit systems, *Sci. Rep.* 7, 14806 (2017).

- S.-P. Zeng, **H.-L. Shi**, X. Zhou, X.-H. Wang, S.-Y. Liu, and M.-L. Hu, Protecting quantum correlations of the XXZ model by topological boundary conditions, *Sci. Rep.* 9, 1083 (2019).
- Y.-T. Gou, **H.-L. Shi**, X.-H. Wang, and S.-Y. Liu, Probabilistic resumable bidirectional quantum teleportation, *Quantum Inf. Process.* 16, 278 (2017).
- **H. Shi**, Y. Lin, Z. Jiang, Y. Su, X. Ding, X. Zhang, H. Zhu, and R. Zhang, Enhanced optical absorption and photocatalytic activity of anatase TiO₂ through C-Nd-codoped: A DFT+ U calculations, *J. Phys. Chem. Solids* 109, 70-77 (2017).
- Y. Lin, **H. Shi**, Z. Jiang, G. Wang, X. Zhang, H. Zhu, R. Zhang, and C. Zhu, Enhanced optical absorption and photocatalytic H₂ production activity of g-C₃N₄/TiO₂ heterostructure by interfacial coupling: A DFT+ U study, *Int. J. Hydrog. Energy* 42, 9903-9913 (2017).
- Y. Lin, Y. Su, Y. Zhu, Z. Jiang, **H. Shi**, X. Ding, X. Zhang, H. Zhu, and R. Zhang, The electronic structure and optical absorption of rutile TiO₂ with La and N dopants from first-principles calculation, *Comput. Mater. Sci.* 131, 178-186 (2017).

Participation in Academic Activities:

- The First International Conference on Quantum Frontiers, 2023/6, Shanghai, China.
- Summer School on Frontier Problems in Atomic, Molecular, and Optical Physics, 2021/8, Yantai, China.
- Peng Huanwu Young Scientists' Forum on Theoretical Physics, 2021/5, Xian, China.
- Quantum Few-to Many-Body Physics in Ultracold Atoms, 2018/4, Wuhan, China.
- The 17th National Conference on Quantum Optics, 2016/8, Lanzhou, China.
- Summer School on Integrable Models and its Applications, 2016/7, Xian, China.

Curriculum vitae

Formazione scolastica:

- settembre 2019-giugno 2023

Dottorato di ricerca presso Innovation Academy for Precision Measurement Science and Technology (nome precedente: Wuhan Institute of Physics and Mathematics), Chinese Academy of Sciences, Wuhan, Cina, sotto la supervisione del Prof. Xi-Wen Guan. Ottieni un dottorato di ricerca in fisica teorica con lode presso l'Università dell'Accademia Cinese delle Scienze. Il dottorato di ricerca la tesi è "Quantum Entanglement: dai sistemi a molti corpi integrabili alle tecnologie quantistiche".

- settembre 2018-giugno 2019

Studio del programma di dottorato presso l'Università dell'Accademia cinese delle scienze, Pechino, Cina.

- settembre 2014-luglio 2018

Laurea in Fisica con lode presso la Northwest University, Xi'an, Cina, sotto la supervisione del Prof. Wen-Li Yang.

Lingue e competenze informatiche:

Cinese mandarino, inglese e MATLAB.

Premi:

- Ottenere il dottorato di ricerca. laurea con lode presso l'Università dell'Accademia cinese delle scienze, l'Università dell'Accademia cinese delle scienze, 2023.
- Borsa di studio nazionale per studenti di dottorato, Ministero dell'Istruzione della Repubblica popolare cinese, 2022.
- La borsa di studio President of Wuhan Branch of CAS (Chinese Academy of Sciences), Wuhan Branch of CAS, 2022.
- Il terzo premio del quattordicesimo premio per eccezionali documenti accademici di scienze naturali, governo popolare della provincia dello Shaanxi, 2020.
- Laureato con lode presso la Northwest University, Northwest University, 2018.
- Il primo premio del settimo e ottavo concorso nazionale di matematica per studenti universitari, Chinese Mathematical Society, 2015 e 2016.

Documenti di citazione:

Google Scholar: <https://scholar.google.com/citations?user=9sJ6YFwAAAAJ&hl=en>

Totale citazioni: 374.

Pubblicazioni:

- **H.-L. Shi**, S. Ding, Q.-K. Wan, X.-H. Wang, and W.-L. Yang, Entanglement, Coherence, and Extractable Work in Quantum Batteries, *Phys. Rev. Lett.* 129, 130602, (2022).
- X. Cai, H. Yang, **H.-L. Shi [co-first author]**, C.-H. Li, N. Andrei, and X.-W. Guan, Multi-particle quantum walks and Fisher information in one-dimensional lattices, *Phys. Rev. Lett.* 127, 100406, (2021).
- J.-X. Liu, **H.-L. Shi [co-first author]**, Y.-H. Shi, X.-H. Wang, and W.-L. Yang, Entanglement and work extraction in the central-spin quantum battery, *Phys. Rev. B* 104, 245418 (2021).
- Q.-K. Wan, **H.-L. Shi [co-first author & corresponding author]**, and X.-W. Guan, Quantum-Enhanced Metrology in Cavity Magnomechanics, *arXiv:2305.08045*.
- **H.-L. Shi**, X.-W. Guan, and J. Yang, Universal shot-noise limit for quantum metrology with local Hamiltonian, in preparation.
- **H.-L. Shi**, X.-H. Wang, W.-L. Yang and X.-W. Guan, Understanding quantum batteries from quantum correlations, an invited topical review from *J. Phys. Condens. Matter.*
- P. Lu, **H.-L. Shi**, L. Cao, X.-H. Wang, T. Yang, J. Cao, and W.-L. Yang, Coherence of an extended central spin model with a coupled spin bath, *Phys. Rev. B* 101, 184307 (2020).
- Y.-H. Shi, **H.-L. Shi**, X.-H. Wang, M.-L. Hu, S.-Y. Liu, W.-L. Yang, and H. Fan, Quantum coherence in a quantum heat engine, *J. Phys. A: Math. Theor.* 53, 085301 (2020).
- Q.-K. Wan, **H.-L. Shi**, X. Zhou, X.-H. Wang, and W.-L. Yang, Decoherence dynamics of entangled quantum states in the XXX central spin model, *Quant. Info. Proc.* 19, 400 (2020).
- **H.-L. Shi**, S.-Y. Liu, X.-H. Wang, W.-L. Yang, Z.-Y. Yang, and H. Fan, Coherence depletion in the Grover quantum search algorithm, *Phys. Rev. A* 95, 032307 (2017).
- **H.-L. Shi**, X.-H. Wang, S.-Y. Liu, W.-L. Yang, Z.-Y. Yang, and H. Fan, Coherence transformations in single qubit systems, *Sci. Rep.* 7, 14806 (2017).
- S.-P. Zeng, **H.-L. Shi**, X. Zhou, X.-H. Wang, S.-Y. Liu, and M.-L. Hu, Protecting quantum correlations of the XXZ model by topological boundary conditions, *Sci. Rep.* 9, 1083 (2019).
- Y.-T. Gou, **H.-L. Shi**, X.-H. Wang, and S.-Y. Liu, Probabilistic resumable bidirectional quantum teleportation, *Quantum Inf. Process.* 16, 278 (2017).

- **H. Shi**, Y. Lin, Z. Jiang, Y. Su, X. Ding, X. Zhang, H. Zhu, and R. Zhang, Enhanced optical absorption and photocatalytic activity of anatase TiO₂ through C-Nd-codoped: A DFT+ U calculations, *J. Phys. Chem. Solids* 109, 70-77 (2017).
- Y. Lin, **H. Shi**, Z. Jiang, G. Wang, X. Zhang, H. Zhu, R. Zhang, and C. Zhu, Enhanced optical absorption and photocatalytic H₂ production activity of g-C₃N₄/TiO₂ heterostructure by interfacial coupling: A DFT+ U study, *Int. J. Hydrog. Energy* 42, 9903-9913 (2017).
- Y. Lin, Y. Su, Y. Zhu, Z. Jiang, **H. Shi**, X. Ding, X. Zhang, H. Zhu, and R. Zhang, The electronic structure and optical absorption of rutile TiO₂ with La and N dopants from first-principles calculation, *Comput. Mater. Sci.* 131, 178-186 (2017).

Partecipazione alle attività accademiche:

- La prima conferenza internazionale sulle frontiere quantistiche, 2023/6, Shanghai, Cina.
- Scuola estiva sui problemi di frontiera in fisica atomica, molecolare e ottica, 2021/8, Yantai, Cina.
- Forum dei giovani scienziati di Peng Huanwu sulla fisica teorica, 2021/5, Xian, Cina.
- Fisica quantistica da pochi a molti corpi negli atomi ultrafreddi, 2018/4, Wuhan, Cina.
- Il 17° Convegno Nazionale su Qua