Curriculum Vitae of Ceren Burçak Dağ

Physics Department, University of Michigan, 450 Church Street, Ann Arbor, MI 48109.
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professional preparation

University of Michigan, Ann Arbor — Ph.D. Physics — 2015-21

Istanbul Technical University, Turkey

- BSc. Electronics and Telecommunications Engineering — 2015
- BSc. Physics — 2015
- Valedictorian in Physics program and Science & Letters College, GPA: 3.90/4.00, Dean's High Honour List

University of Waterloo, Canada

- Academic exchange, ECE Dept. of Engineering School — Jan-Sept. 2014

theses

Ph.D. Thesis, *Thermalization and Information Scrambling in Quantum Phases.*
Advisors: Kai Sun & Luming Duan
University of Michigan.

Engineering BSc. Thesis, *A Readout Method for a Flux Qubit-Resonator System in the Ultrastrong Coupling Regime.*
Advisors: Pol Forn-Diaz & Chris Wilson
Institute for Quantum Computing (IQC), University of Waterloo, Canada; Electrical and Electronics School of Istanbul Technical University.

Physics BSc. Thesis, *Quantum Thermalization of Single-Mode Cavities.*
Advisors: Özgür Müstecaplıoğlu & A. Levent Subaşı
Koç University, Istanbul; Science & Letters College of Istanbul Technical University.

research interests

quantum phase transitions; quantum many-body dynamics (information scrambling, quantum thermalization, dynamical phase transitions); cold atoms; quantum information; condensed matter physics; quantum thermodynamics; information geometry.

scientific impact

12 publications and preprints with 120+ citations of most are first authored; 7+ conference proceedings (talks and posters); 5 invited talks.

honors & awards

2020 Frank Sevcik Award by University of Michigan, Physics Department
2015 Best Undergraduate Thesis Award in Electrical Engineering by ETMD (Turkish Electrical Engineers Organization)
2014 SPIE Optics and Photonics Education Scholarship
2011-15 Siemens Future Professionals Scholarship
2009 Stockholm Junior Water Prize for *Rain as an alternative clean energy source*; awarded $5k, representation of Turkey in 2010 European Youth Water Summit in European Parliament, Brussels; invitation for poster talk in 2009 Junior Scientists Symposium, Florida.
2009 First Step to Nobel Prize in Physics for *Experimental determination of the diffusion rates of soft gels drying at different temperatures and pH*; awarded to visit Institute of Physics, Polish Academy of Sciences, Warsaw, Poland.
2009 National Philosophy Olympiads, Best 4^{th} Essay in Turkey.

2007 TUBITAK National Science Fair Mention Award in Mathematics for *Butterfly theorems.*

publications & preprints

1. **Ceren B. Dag**, L.-M. Duan and K. Sun
Topologically induced pre-scrambling and dynamical detection of topological phase transitions at infinite temperature.
Physical Review B 101 (10), 104415 (2020).

2. **Ceren B. Dag**, K. Sun and L.-M. Duan
Detection of quantum phases via out-of-time-order correlators.
Physical Review Letters 123, 140602 (2019).

3. H.-X. Yang, T. Tian, Y.-B. Yang, L.-Y. Qiu, H.-Y. Liang, A.-J. Chu, **Ceren B. Dag**, Y. Xu, Y. Liu, L.-M. Duan
Observation of dynamical quantum phase transitions in a spinor condensate.
Physical Review A 100, 013622 (2019).

4. **Ceren B. Dag** and L.-M. Duan
Detection of out-of-time-order correlators and information scrambling in cold atoms: Ladder-XX model.
Physical Review A 99 052322 (2019).

5. A. Tuncer, M. Izadyari, **Ceren B. Dag**, F. Ozaydin, and Ö. E. Müstecaplıoglu
Work and Heat Value of Bound Entanglement.
Quantum Inf Process (2019) 18: 373.

6. **Ceren B. Dag**, W. Niedenzu, F. Ozaydin, Ö. E. Müstecaplıoğlu, G. Kurizki
Temperature control in cavities by combustion of two-atom entanglement.
J. Phys. Chem. C 123, 4035 (2019).

7. **Ceren B. Dag**, S.-T Wang and L.-M. Duan
Classification of quench-dynamical behaviors in spinor condensates.
Physical Review A, 97 023603 (2018).

8. R. Kokkoniemi, T. Ollikainen, R. E. Lake, S. Saarenpää, K. Y. Tan, J. I. Kokkala, **Ceren B. Dag**, J. Govenius and M. Möttönen
Flux-tunable phase shifter for microwaves.
Nature Scientific Reports, v.7, 14713 (2017).

9. **Ceren B. Dag**, W. Niedenzu, Ö. E. Müstecaplıoğlu and G. Kurizki
Multiatom Quantum Coherences in Micromasers as Fuel for Thermal and Nonthermal Machines.
Entropy, v.18, 244 (2016).

10. **Ceren B. Dag**, M. A. Anıl and A. Serpengüzel
Meandering Waveguide Distributed Feedback Lightwave Circuits.
IEEE Journal of Lightwave Technology, v.33, 9 (2015).

talks

2020 APS March Meeting, virtual (covid-19)
Topologically induced prescrambling and dynamical detection of topological phase transitions at infinite temperature

2019 U. M. Physics Department CM-AMO Seminar, Ann Arbor INVITED

Information scrambling in quantum phases

2019 National Magnetic Lab CMS Hot Topics Seminar, Tallahassee INVITED
Information scrambling in quantum phases and topologically induced prescrambling

2019 Koç University GSSE Physics Seminar Series, Istanbul INVITED
Information scrambling in quantum phases

2019 APS March Meeting, Boston
Detection of quantum phases via out-of-time-order correlators

2018 AFOSR MURI Funding Talk at MIT, Boston INVITED
Detection of out-of-time-order correlators and information scrambling in cold atoms: Ladder-XX model

2018 APS DAMOP Meeting, Fort Lauderdale
Sudden Quench non-Equilibrium Dynamics of Spinor Condensates

2015 SPIE Photonics West OPTO, San Francisco, CA
Novel Distributed Feedback Lightwave Circuit Elements

2014 Koç University GSSE Physics Seminar Series, Istanbul INVITED
Theoretical design of a readout system for the Flux Qubit-Resonator Rabi Model in the ultrastrong coupling regime

workshops accepted to

2020 Boulder School for Condensed Matter and Materials Physics: ultracold matter
University of Colorado, Boulder, Colorado

2020 Theory Winter School: Quantum Matter without quasiparticles
National Magnetic Laboratory, Tallahassee, Florida

2019 Theory Winter School: Synergies between Real Materials, Model Hamiltonians and Beyond
National Magnetic Laboratory, Tallahassee, Florida POSTER TALK

2018 Boulder School for Condensed Matter and Materials Physics: quantum information
University of Colorado, Boulder, Colorado POSTER TALK

2018 Theory Winter School: Entanglement, Thermalization and Chaos
National Magnetic Laboratory, Tallahassee, Florida

2017 Autumn School on Strongly Correlated Electrons
Jülich Forschungszentrum, Jülich, Germany POSTER TALK

2014 Undergrad School on Experimental Quantum Information Processing (USEQIP)
Institute for Quantum Computing, Waterloo, Canada

2013 Introduction to Quantum Systems and Devices
Aalto University, Finland

2009 Summer Science Program (SSP)
New Mexico Institute of Tech., New Mexico