## IMPORTANT MESSAGE ON COVID-19

We will operate the workshop as a hybrid event, such that presenters and participants can choose to participate in-person in Vancouver (Canada) or remotely.

## AIMS OF THE WORKSHOP

The field of quantum computing has experienced remarkable progress after decades of research and development. Prototypes of quantum computers already exist and have been made available to users through cloud services (e.g., IBM Q experience, Google quantum AI, or Xanadu quantum cloud). While fault-tolerant and large-scale quantum computers are not available yet, the potential of this new technology is undeniable. Quantum algorithms have the proven ability to either outperform classical approaches for various tasks or are impossible to be efficiently simulated by classical means under reasonable complexity-theoretic assumptions. Even imperfect current-day technology is speculated to exhibit computational advantages over classical systems.

For most database researchers, quantum computing and quantum machine learning are still new research fields. The goal of this workshop is to bring together academic researchers and industry practitioners from multiple disciplines (e.g., database, AI, software, physics, etc.) to discuss the challenges, solutions, and applications of quantum computing and quantum machine learning that have the potential to advance the state of the art of data science and data management technologies. Our purpose is to foster the interaction between database researchers and more traditional quantum disciplines, as well as industrial users. The workshop serves as a forum for the growing quantum computing community to connect with database researchers to discuss the wider questions and applications of how quantum resources can benefit data science and data management tasks, and how quantum software can support this endeavor.

We believe that many unsolved and interesting issues can be found at boundaries and intersections between different fields and that there are insufficient venues to publish such cross-disciplinary results. We also believe that an important aspect of future quantum computing will concern issues of handling data in one way or another. This workshop will serve as a venue not only to discuss early, experimental results in research, but also to feature a demonstration part with the intention of providing attendees with first-hand experience in using novel quantum computing techniques that go beyond the simple examples offered by various web services. This will give researchers a realistic intuition about quantum computing for data science and data management tasks.

## CATEGORIES OF PAPERS

The workshop solicits papers of the following categories:

- **Research Papers** propose new approaches, theories or techniques related to quantum data science and management including new data structures, protocols and algorithms. They should make substantial theoretical and empirical contributions to the research field.
- **System Papers** describe new systems and whole frameworks for enabling quantum data science and management.
- **Experiments and Analysis Papers** focus on the experimental evaluation of existing approaches including data structures and algorithms for quantum data science and management and bring new insights through the analysis of these experiments. Results of Experiments and Analysis Papers can be, for example, showing the benefits of well-known approaches in new settings and environments, opening new research problems by demonstrating unexpected behavior or phenomena, or comparing a set of traditional approaches in an experimental survey.
- **Application Papers** report practical experiences on applications of quantum data science and management. Application Papers might describe how to apply quantum technologies to specific application domains.
- **Vision Papers** identify emerging new or future research issues and directions and describe new research visions for quantum data science and management. The new visions will potentially have significant impacts on society.
- **Demo Papers** deal with innovative approaches and applications for quantum data science and management. These papers describe a showcase of the proposed approach/application. We are especially interested in demonstrations having a WOW-effect.

The length of papers must be within 5 pages to 10 pages. Accepted papers will be published in the CEUR Workshop proceedings (CEUR-WS.org) and presented as oral presentations.

## TOPICS OF INTEREST

We are interested in all issues concerning quantum data science and management such as the following:

- Quantum Computing for problems related to Data Science and Management
- Quantum Data Science
  - Quantum Computing for Data Science
  - Data Science for Quantum Computing
- Quantum Data Management
  - Quantum Computing for Data Management
  - Data Management for Quantum Computing
- Quantum Machine Learning
  - Quantum Machine Learning Enabled Databases
  - Quantum Data Management to Support Machine Learning
  - New approaches to Quantum Machine Learning
- Applications for
  - Quantum Data Science
  - Quantum Data Management
  - Quantum Machine Learning
- Quantum Algorithms with applications in Quantum Data Science and Management
- Quantum Software Tools for Quantum Data Science and Management
  - Frameworks and APIs
  - Programming Languages
  - Optimizers of Quantum Programs and Circuits
- Quantum Cryptography and Security for Data Science and Management

## WORKSHOP CHAIRS

- Sven Groppe, University of Lübeck, Germany
- Jiaheng Lu, University of Helsinki, Finland
- Wolfgang Mauerer, Technical University of Applied Science Regensburg, Germany
- Le Gruenwald, University of Oklahoma, USA

## PUBLICITY CHAIRS

- Srinjoy Ganguly, Woxsen University, India
- Sanjay Vishwakarma, IBM Quantum, IBM Research - Almaden, USA

## PROCEEDINGS CHAIRS

- Valter Uotila, University of Helsinki, Finland

## STIPEND CHAIRS

- Ghanshyam Singh, Malaviya National Institute of Technology Jaipur (MNIT), India

## PROGRAM COMMITTEE

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- Ghanshyam Singh, Malaviya National Institute of Technology Jaipur (MNIT), India
- Valter Uotila, University of Helsinki, Finland
- Sanjay Vishwakarma, IBM Quantum, IBM Research - Almaden, USA
- Tobias Winker, University of Lübeck, Germany
- Zhengtong Yan, University of Helsinki, Finland

## IMPORTANT DATES

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| **Submission (extended):** | June 5, 2023 |
| **Notification:** | June 30, 2023 |
| **Workshop:** | September 1, 2023 |

## SUBMISSION

Authors are invited to submit original, unpublished research papers that are not being considered for publication in any other forum.

Manuscripts should be formatted using the camera-ready templates in the CEUR Workshop Proceedings (CEUR-WS.org) double-column format. The length of papers must be within 5 pages to 10 pages.

Accepted papers will be published online in the CEUR Workshop proceedings (CEUR-WS.org).

We describe manuscript preparation and submission procedure at https://www.ifis.uni-luebeck.de/~groppe/qdsm/submit

## STIPEND

Our industry sponsor Quantum Brilliance offers to supplement the registration fees for young researchers, as well as researchers from underrepresented counties and communities. Please check the QDSM workshop webpage for further information.