



Delft University of Technology

Document Version

Final published version

Licence

CC BY

Citation (APA)

Sabek, I., Trummer, I., & Hai, R. (2026). 3rd International Workshop on Quantum Computing and Quantum-Inspired Technology for Data-Intensive Systems and Applications (Q-Data). In *SIGMOD Companion 2026 - Companion of the International Conference on Management of Data* (pp. 602-603). Association for Computing Machinery (ACM). <https://doi.org/10.1145/3788853.3802507>

Important note

To cite this publication, please use the final published version (if applicable).
Please check the document version above.

Copyright

In case the licence states "Dutch Copyright Act (Article 25fa)", this publication was made available Green Open Access via the TU Delft Institutional Repository pursuant to Dutch Copyright Act (Article 25fa, the Taverne amendment). This provision does not affect copyright ownership.
Unless copyright is transferred by contract or statute, it remains with the copyright holder.

Sharing and reuse

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

Takedown policy

Please contact us and provide details if you believe this document breaches copyrights.
We will remove access to the work immediately and investigate your claim.

This work is downloaded from Delft University of Technology.

3rd International Workshop on Quantum Computing and Quantum-Inspired Technology for Data-Intensive Systems and Applications (Q-Data)

Ibrahim Sabek
University of Southern California
Los Angeles, CA, USA
sabek@usc.edu

Immanuel Trummer
Cornell University
Ithaca, NY, USA
it224@cornell.edu

Rihan Hai
TU Delft
Delft, Netherlands
R.Hai@tudelft.nl

Abstract

Quantum computing has seen significant advancements with the emergence of commercial quantum hardware from major tech companies and startups. These developments, alongside new classical hardware accelerators inspired by quantum technologies, facilitate the rapid solving of complex optimization problems and recently spawned a flurry of research in various communities.

We propose to hold the Q-Data workshop for the 3rd time. The primary objective of this workshop is to explore how quantum computing and related technologies can enhance data processing, data management, data analysis systems, and techniques. It also focuses on hybrid approaches integrating quantum and classical computing methodologies to enhance such data systems and techniques. This workshop will spur new research efforts in this emerging field and pave the way for building next-generation data-intensive systems with quantum computing support.

CCS Concepts

• Information systems → Data management systems; • Computer systems organization → Quantum computing.

Keywords

Data-Intensive Systems, Databases, Data Management and Processing, Quantum Computing, Quantum-Inspired Technology

ACM Reference Format:

Ibrahim Sabek, Immanuel Trummer, and Rihan Hai. 2026. 3rd International Workshop on Quantum Computing and Quantum-Inspired Technology for Data-Intensive Systems and Applications (Q-Data). In *Companion of the International Conference on Management of Data (SIGMOD Companion '26)*, May 31–June 05, 2026, Bengaluru, India. ACM, New York, NY, USA, 2 pages. <https://doi.org/10.1145/3788853.3802507>

1 Introduction

Whereas quantum computing started out as a purely theoretical concept, the last few years have seen a "Cambrian explosion" of first-generation commercial quantum hardware culminating from decades of foundational research. Players, including the likes of Google, IBM, and Intel, as well as startup companies like IQM, D-Wave, IonQ, and Rigetti, are now producing hardware devices that

implement quantum computing using various technologies. At the same time, the recent advances in quantum computing have inspired a new generation of classical hardware accelerators, offered commercially by providers such as Fujitsu, Toshiba, and 1Qubit, that mirror the interfaces and take inspiration from internal processes of quantum computers. These accelerators, including digital annealers, as well as GPU- and FPGA-based simulators of quantum computation, obtain approximate solutions for extremely large, combinatorial optimization problems quickly.

Using quantum computing and related technologies has become conveniently possible with standard IT interfaces. Many software frameworks have recently appeared that make solving diverse problems using quantum computers easier. At the same time, multiple cloud providers nowadays offer quantum computing as a service, making the technology accessible to broad shares of users. Together, these developments have recently spawned a flurry of research in various communities, ranging from operations research to machine learning, and aimed at analyzing the transformative potential of quantum computing for specific use cases.

Having a track record of exploring the potential of emerging hardware for data processing, the time is right for the database community to investigate novel use cases and algorithms for quantum computing in the database domain. We propose to hold our full-day Q-Data workshop (www.qdataworkshop.com/) for the 3rd time. Q-Data brings together researchers and practitioners from the database systems and quantum computing communities with the goal of investigating various ways of integrating emerging quantum computing techniques, as well as quantum-inspired hardware accelerators, with data-intensive systems and their applications. The primary objective of this workshop is to explore how quantum computing and related technologies can enhance different data system components, e.g., performance optimizations, scheduling, tooling, and interfaces. We also focus on hybrid approaches integrating quantum and classical computing methodologies to enhance these data system components. Q-Data spurs new research efforts in this emerging field and paves the way for building next-generation data-intensive systems with quantum computing support.

2 Topics of Interest

Topics of interest for the workshop include (but are not limited to):

- Enhancing database system components (e.g., query optimizer, query scheduler, transaction scheduler, authentication and integrity manager) with quantum computing and quantum-inspired accelerators



This work is licensed under a Creative Commons Attribution 4.0 International License. *SIGMOD Companion '26, Bengaluru, India*
© 2026 Copyright held by the owner/author(s).
ACM ISBN 979-8-4007-2450-3/2026/05
<https://doi.org/10.1145/3788853.3802507>

- Data processing systems that integrate quantum-based and quantum-inspired accelerators, including hybrid quantum-classical approaches
- Quantum machine learning for autonomous database management, database tuning, workload management, and learned indexes
- Approaches for data exploration, discovery, and integration based on quantum computing and quantum-inspired hardware accelerators
- Formal analysis and experimental evaluations assessing the potential of quantum computing for specific use cases in data processing and data management
- Vision papers describing novel database system designs and novel use cases in data processing and management enabled by quantum computing
- Quantum computing libraries and programming interfaces for database systems
- Domain-specific approaches exploiting quantum computers and quantum-inspired accelerators for data analysis (e.g., in finance or health care)
- Design of benchmarks, metrics, and evaluation frameworks for hybrid quantum-classical data processing systems and quantum-inspired accelerators
- Leveraging ideas, techniques, and systems from the database community to support advances in quantum computing, e.g., via efficient quantum simulation, data management for quantum experiments, or data encoding and error correction methods for quantum computing

3 Solicitations and Review Process

Q-Data solicits two types of contributions: *Papers* and *Abstracts*.

Papers: We will accept full (up to 12 pages) and short (up to 6 pages) papers, with unlimited pages for references, in three categories:

- **Algorithms:** The primary contribution lies in algorithms that allow solving problems that are relevant to the database community on quantum computers or quantum-inspired accelerators. Long papers are expected to provide significant experimental or formal analysis results evaluating the proposed algorithm.
- **Systems:** The primary contribution lies in proposing new architectures or frameworks that use quantum computing or quantum-inspired accelerators to address the various data processing and management problems. Long papers are expected to evaluate the implementation of the proposed system thoroughly.
- **Experiments:** The primary contribution lies in experimental analysis, quantifying properties of existing or novel algorithms that are at least partially executed on quantum

computers or quantum-inspired accelerators (or use corresponding simulators). Long papers are expected to provide a more detailed experimental analysis.

Abstracts: Since the workshop focuses on a relatively new area, we will encourage the authors to submit a 1-page abstract about the preliminary findings of their ongoing projects or even raw ideas that are not fully explored. An abstract submission is expected to have a single author. Accepted abstracts will appear in the proceedings.

The workshop will follow the SIGMOD submission guidelines¹, and the ACM publications' conflict of interest policy². To avoid conflicts of interest, we will impose a *triple-blind* submission and review policy. In addition to the traditional double-blind submission that hides the authors' and referees' names from each other, the triple-blind reviewing goes further and hides the referee names among referees during paper discussions.

Tentative important dates are listed below:

- Paper submission: March 30, 2026, 11:59 PM PST
- Author notification: April 10, 2026
- Camera-ready submission: May 1, 2026
- Workshop day: May 31, 2026

4 Workshop Organization

Workshop Co-Chairs:

- Ibrahim Sabek (University of Southern California, USA)
- Immanuel Trummer (Cornell University, USA)
- Rihan Hai (Delft University of Technology, Netherlands)

Steering Committee:

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

Program Committee Members:

- Amr Magdy (UC Riverside, USA)
- Bo Zhao (Aalto University, Finland)
- Federico Spedalieri (Capital One, USA)
- Gongsheng Yuan (Zhejiang University, China)
- Ingo Schmitt (Technical University Cottbus, Germany)
- Johanna Barzen (University of Stuttgart, Germany)
- Kurt Stockinger (Zurich University of Applied Sciences, Switzerland)
- Manuel Schönberger (Technical University of Applied Sciences Regensburg, Germany)
- Sebastian Feld (TU Delft, Netherlands)
- Stuart Hadfield (Quantum AI Lab at NASA Ames Research Center, USA)
- Valter Uotila (University of Helsinki, Finland)

¹<https://www.acm.org/publications/proceedings-template>

²<https://www.acm.org/publications/policies/conflict-of-interest>