NAISE
Northwestern + Argonne
Institute for Scientific and Engineering Excellence

NAISE Workshop on
End-to-end Quantum-HPC Workflows for Scientific Applications

Information Booklet

March 31, 2026

VENUE
Northwestern, Evanston Campus
NAISE HQ, Hogan Building, Suite 1-160
2205 Tech Drive, Evanston, IL, 60608
https://maps.northwestern.edu/facility/88

PARKING
Northwestern North Parking Garage*
2311 N. campus Drive, Evanston, IL, 60208
https://maps.northwestern.edu/facility/646
**once at event, please ask for a validation ticket*

NAISE CONTACTS

Technical:
Begum Gulsoy – Director of Research
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BRIEF

NAISE Workshop on End-to-end Quantum-HPC Workflows for Scientific Applications

March 31, 2026 @ NAISE / Northwestern – Evanston Campus

Scope

This workshop is the first in a series aimed at exploring how quantum computing may eventually fit into scientific workflows alongside HPC for challenging scientific applications. We will explore possibilities and open a dialogue; an initial step toward understanding where quantum might offer your science more value. Neelesh Patankar in coordination with Laura Schulz will introduce the workshop with an overview of the goals. We'll continue by examining workflows through examples from Peter Coveney and IQM's Kristine Rezai, showing how they identified bottlenecks and potential quantum leverage points. We'll also discuss how quantum-HPC hybrid approaches might reshape software design. Martin Schulz and Robert Wille will help us explore how workflows may shift. Sachin Bharadwaj will provide a perspective from engineering mechanics, highlighting recent progress in developing end-to-end quantum methods for nonlinear systems such as fluid flows. This is a starting point as we aim to understand the needs, concerns, and the opportunities envisioned in various application domains. As quantum systems emerge alongside HPC, we want to identify potential use cases with those eager to explore new methods for scientific progress. This workshop will help us collaboratively gauge what's possible and what steps may follow.

Confirmed Speakers:

- **Neelesh Patankar:** Professor of Mechanical Engineering, Director of NAISE, Northwestern University
- **Peter Coveney:** Professor of Physical Chemistry, Director of the Centre for Computational Science, University College London.
- **Kristine Rezai:** Director of Customer Solutions, IQM Quantum Computers.
- **Martin Schulz:** Chair of Computer Architecture and Parallel Systems, Co-founder Munich Quantum Software Stack
- **Robert Wille:** Professor at TU Munich, Co-Founder of the Munich Quantum Software Company.
- **Sachin Bharadwaj:** Postdoctoral Associate, Mechanical and Aerospace Engineering, New York University

Organizers:

Laura Schulz, Lead for Quantum Innovation, Leadership Computing Facility, Argonne
Neelesh Patankar, NAISE Director, Northwestern & Argonne-NAISE Fellow
Begum Gulsoy, NAISE Director of Research, Northwestern & Argonne-NAISE Fellow

DRAFT AGENDA

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All Times CST

08:45AM – 09:00AM Breakfast & Registration

09:00AM – 09:30AM **Welcome & Workshop Charge**
Neelesh Patankar, *Northwestern* & Laura Schulz, *Argonne*

09:30AM – 10:15AM **Successful/Demonstrated Workflow Examples**
Peter Coveney*, University College London*

10:15AM – 11:15AM **Successful/Demonstrated Workflow Examples**
Kristine Rezai, *IQM Quantum Computers*
Eric Mansfield & Alvaro Caride Sanchez, *IQM Quantum Computers (Virtual)*

11:15AM – 11:30AM Break

11:30AM – 12:00PM **Developments in Workflows for Non-linear Systems**
Sachin Bharadwaj*, New York University*

12:00PM – 12:30PM Group Photo & Lunch, followed by working lunch

12:30PM – 02:00PM **Architectures and Environments**
Martin Schulz & Robert Wille, *Technical University Munich*

02:00PM *Adjourn workshop*

02:00PM – 02:30PM Break

02:30PM – 05:00PM Small group Brainstorming session / Deep Dive (close session)

SPEAKERS & ORGANIZERS

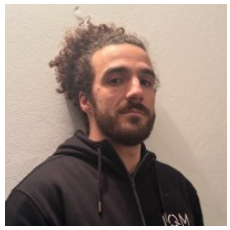
Neelesh Patankar | Northwestern & Argonne - NAISE Fellow
Workshop Co-organizer
Director, Northwestern Argonne Institute for Scientific and Engineering Excellence
Professor, Department of Mechanical Engineering
Link to bio / interests

Laura Schulz | Argonne
Workshop Co-organizer
Lead for Quantum Innovation, Leadership Computing Facility, Argonne
Link to bio / interests

Peter Coveney | University College London
Professor of Physical Chemistry
Director of the Centre for Computational Science
Link to bio / interests

Kristine Rezai | IQM Quantum Computers
Director of Customer Solutions
Link to bio / interests

Eric Mansfield | IQM Quantum Computers
Senior Product Manager
Link to bio / interests



Alvaro Caride Sanchez | IQM Quantum Computers
Technical Sales Engineer
Link to bio / interests

Sachin Bharadwaj | New York University
Postdoctoral Associate, Mechanical and Aerospace Engineering
Link to bio / interests

Martin Schulz | Technical University of Munich
Professor & Chair of Computer Architecture and Parallel Systems
Link to bio / interests

Robert Wille | Technical University of Munich
Professor & Chair of Design Automation
Link to bio / interests

Begum Gulsoy | Northwestern & Argonne - NAISE Fellow
Workshop Co-organizer
Director of Research, NAISE & Office for National Laboratories
Research Associate Professor, Department of Materials Science and Engineering
NAISE Website
Link to bio / interests
