

# HELMUT G. KATZGRABER

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## EXPERTISE

Seasoned research and business manager with experience in leading diverse international teams of researchers and developers with a focus on emergent technologies and scalable solutions to industry's hardest problems. 20+ year experience in solving optimization problems, algorithm development, quantum technologies, and experimenting with novel computing paradigms. General Partner and Chief Science Officer with experience in due diligence for venture capital funds with a focus on advanced compute hardware and quantum technologies. Comfortable with negotiating C-Suite-level contracts. Multicultural background and fluent in English, German, and Spanish.

## PROFESSIONAL EXPERIENCE

**55 NORTH** | Chief Science Officer & General Partner | Copenhagen DK Sep 2025 – today

As CSO and general partner at 55 North VC (co-funded by Novo Holdings and the Danish Export and Innovation Fund), I lead our scientific mission to shape the future by accelerating innovation in quantum and adjacent technologies. With a passion for bridging cutting-edge science and impactful investments, I evaluate groundbreaking startups, perform technical diligence, and foster a collaborative environment across academia, industry, and entrepreneurs. 55 North Ventures empowers founders who are redefining the boundaries of quantum computing, communications, sensing, as well as enabling technologies (e.g., cryogenic cooling and packaging) to drive progress for the planet.

**AMAZON WEB SERVICES** | Global Practice Lead – Advanced Solutions | Seattle WA Aug 2020 – Aug 2025

Research and business manager leading an interdisciplinary international professional services team that focuses on quantum and hybrid solutions, assessing the viability of quantum technologies for industry applications across verticals. The team delivers impact by building solutions that combine quantum computing, operations research, high-performance computing, and machine learning. The Advanced Solutions Lab is the only customer-facing organization in the broader AWS quantum computing effort, engaging typically with Fortune 500 customers. Experience with C-Suite negotiations. Selected public references:

- BMW Group: Optimization of robot path planning resulting in an 8 – 10% reduction of robot run time per vehicle.
- Chugai Pharmaceutical: Development of an efficient constraint-programming approach to peptide folding.
- Amgen: Optimization of clinical trial enrollment (reduction of simulation time from hours to seconds).
- Australian Red Cross: Optimization of nurse schedules resulting in a 47% reduction in cost per blood donation.
- Amazon.com: Development of an algorithm that saves Amazon EU approx. \$39MM per annum in delivery costs.
- JPMorgan Chase: Development of a compilation toolchain for Rydberg atom optimizers for problems with thousands of variables.
- Fidelity: Development of a pruning algorithm that maintains expressivity and reduces the memory footprint of gen-AI models.
- Co-inventor of 13 patents (pending).

**MICROSOFT CORPORATION** | Principal Research Manager | Redmond WA Aug 2018 – Aug 2020

Led an interdisciplinary team of developers and scientists focusing on the development of optimization algorithms and a fully-managed service. Led a professional services team seeking quantum applications.

- Designed and led the development of quantum-inspired solvers on CPUs and FPGAs vastly outperforming quantum optimizers.
- Led the team that built the first prototype of Azure Quantum, the first fully-managed cloud-based quantum service.
- Led a professional services team solving complex problems for customers such as, e.g., Case Western Reserve (3x speedup for MRI scans) and Willis Towers Watson (accelerated stratified sampling for risk modeling).
- Co-inventor of 8 patents (all granted).

## CONSULTANT

Guided research efforts and the development of algorithms that led to the launch of the 1Qloud optimization service at 1Qbit, Azure Quantum at Microsoft Corp., and the development of patented space-exploration radiation shielding technology for Atlantis Industries.

- Head of Research | 1QBit | Vancouver BC Feb 2017 – Aug 2018
- Consultant | Microsoft Corp. | Redmond WA Jun 2017 – Aug 2018
- Consultant | Atlantis Industries, Inc. | Baton Rouge LA Jan 2018 – Jan 2022
- Co-inventor of 2 patents (all granted).

BOARD MEMBER

Board memberships at different institutions and portfolio companies	
• Board Member   British Columbia Quantum Algorithms Institute   Vancouver BC	Jan 2021 – May 2022
• Board Member   55 North Management ApS   Copenhagen DK	Oct 2025 – today

FACULTY POSITIONS

Full-time faculty positions at academic institutions	
• Professor   Department of Physics & Astronomy, Texas A&M University   College Station TX	Sep 2015 – Jan 2021
• Associate Professor   Department of Physics & Astronomy, Texas A&M University   College Station TX	Sep 2012 – Aug 2015
• Assistant Professor   Department of Physics & Astronomy, Texas A&M University   College Station TX	Jan 2009 – Aug 2012
• Assistant Professor   Theoretical Physics Institute, ETH Zurich   Zurich Switzerland	Mar 2007 – Mar 2013

COURTESY APPOINTMENTS

Academic courtesy appointments at universities and research institutions	
• Affiliate Professor   University of Washington   Seattle WA	Feb 2019 – Aug 2025
• Visiting Professor   Coventry University   Coventry UK	Jul 2015 – Jul 2016
• External Faculty Member   Santa Fe Institute   Santa Fe NM	Jul 2014 – Jul 2020

RESEARCH SCIENTIST

Postdoctoral appointments, graduate and undergraduate research positions	
• Postdoctoral Researcher   ETH Zurich   Zurich Switzerland	Oct 2002 – Mar 2007
• Postdoctoral Researcher   University of California at Davis   Davis CA	Oct 2002 – Mar 2007
• Graduate Research Assistant   University of California at Santa Cruz   Santa Cruz CA	Oct 1997 – Oct 2001
• Undergraduate Research Assistant   ETH Zurich   Zurich Switzerland	Apr 1994 – Sep 1997

EDUCATION

EXECUTIVE EDUCATION   Focus on economics and leadership   Stanford Graduate Business School LEAD Program	2020 – 2021
PHD   Computational Physics   University of California at Santa Cruz	1998 – 2001
MASTER'S DEGREE   Computational Physics   University of California at Santa Cruz	1997 – 1998
DIPLOMA   Theoretical Physics (diploma with distinction)   Swiss Federal Institute of Technology (ETH Zurich)	1992 – 1997
MILITARY SERVICE   Österreichisches Bundesheer (medal for outstanding service)   Vienna Austria	1992 – 1992

SCIENTIFIC ACHIEVEMENTS & TECHNICAL SKILLS

SCIENCE   (Co)Author of 178 publications (Google Scholar)   (Co)inventor of 23 patents   Speaker at over 280 international venues	
VENTURE CAPITAL   Experience in due diligence (Advisor for Cambium Capital since 2020 and Novo Holdings since 2025)	
INDUSTRY CERTIFICATIONS   AWS Cloud Practitioner certified, AWS AI Practitioner certified	

AWARDS

FELLOW   American Physical Society	2021
OUTSTANDING REFEREE   American Physical Society	2016
TEACHING AWARD   Texas A&M University	2016
CAREER AWARD   National Science Foundation	2012
SNF PROFESSORSHIP   Swiss National Science Foundation Faculty Fellowship	2007
POLYA PRIZE   ETH Zurich (best diploma thesis in mathematics and theoretical physics)	1997

INTERESTS

American Physical Society member (since 1996)   PADI Divemaster & Underwater Photography (since 2003)   Karate (1 <sup>st</sup> Dan, black belt)	
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