

# 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
- Board Member | 55 North Management ApS | Copenhagen DK

Jan 2021 – May 2022  
Oct 2025 – today

## FACULTY POSITIONS

Full-time faculty positions at academic institutions

- Professor | Department of Physics & Astronomy, Texas A&M University | College Station TX
- Associate Professor | Department of Physics & Astronomy, Texas A&M University | College Station TX
- Assistant Professor | Department of Physics & Astronomy, Texas A&M University | College Station TX
- Assistant Professor | Theoretical Physics Institute, ETH Zurich | Zurich Switzerland

Sep 2015 – Jan 2021  
Sep 2012 – Aug 2015  
Jan 2009 – Aug 2012  
Mar 2007 – Mar 2013

## COURTESY APPOINTMENTS

Academic courtesy appointments at universities and research institutions

- Affiliate Professor | University of Washington | Seattle WA
- Visiting Professor | Coventry University | Coventry UK
- External Faculty Member | Santa Fe Institute | Santa Fe NM

Feb 2019 – Aug 2025  
Jul 2015 – Jul 2016  
Jul 2014 – Jul 2020

## RESEARCH SCIENTIST

Postdoctoral appointments, graduate and undergraduate research positions

- Postdoctoral Researcher | ETH Zurich | Zurich Switzerland
- Postdoctoral Researcher | University of California at Davis | Davis CA
- Graduate Research Assistant | University of California at Santa Cruz | Santa Cruz CA
- Undergraduate Research Assistant | ETH Zurich | Zurich Switzerland

Oct 2002 – Mar 2007  
Oct 2002 – Mar 2007  
Oct 1997 – Oct 2001  
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

POLYVA 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)