

Brad Lackey

Microsoft

*Mapping circuit fault diagnosis problems to unconstrained binary optimization***Friday, February 10, 2023; 10:00 a.m., BRK 2001**[Zoom Link](#)

Host: Prof. Alexandra Boltasseva

Fault diagnosis is major topic in design automation that has seen decades of research and the development of numerous advanced optimizers. In this talk I discuss the strong fault model of combinational circuits (i.e. those formed out of and, or, and not gates), and how to translate or “map” the diagnosis problem into a binary optimization problem. I will also discuss solving such problems with quantum annealers and quantum-inspired optimizers, and certain features of the mapping that can improve the likelihood of finding the optimum.



Brad Lackey is a mathematician and computer scientist who joined the Microsoft Quantum group in December 2018. Prior to Microsoft, he was Senior Technical Leader with the U.S. Department of Defense, Adjunct Professor of Computer Science at University of Maryland, and Fellow of the Joint Center for Quantum Information and Computer Science.

He received a B.Sc., M.Sc., and Ph.D. in Mathematics from University of Houston, was an Izaak Killam Postdoctoral Fellow at University of Alberta, and an EPSRC Postdoctoral Fellow and University Lecturer at University of Hull.

He has broad research interests in quantum information science, including quantum algorithm development and quantum-inspired optimization, quantum error correction, (post-)quantum cryptography, and foundations of quantum theory.