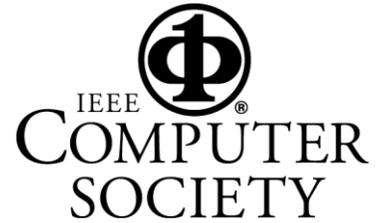


PRINCETON ACM / IEEE-CS CHAPTERS  
FEBRUARY 2021 JOINT MEETING



## Seismic Shifts: Challenges and Opportunities in the “Post-ISA” Era of Computer Systems Design

How can we make computers faster and more power-efficient? We might need to look at changing the instruction sets.

For decades, Moore’s Law and its partner Dennard Scaling have together enabled exponential computer systems performance improvements at manageable power dissipation. With the slowing of Moore/Dennard improvements, designers have turned to a range of approaches for extending scaling of computer systems performance and power efficiency. Unfortunately, the scaling gains afforded by these techniques come with significant costs: increased hardware and software complexity, degraded programmability and portability, and increased likelihood of design errors and security vulnerabilities. The long-held hardware-software abstraction offered by the Instruction Set Architecture (ISA) interface is fading quickly in this post-ISA era. The talk will cover a range of design opportunities and challenges, with a particular emphasis on the surprising alignments between full-stack issues in both classical and quantum computing systems.

**Margaret Martonosi** is an Assistant Director at the National Science Foundation (NSF) where she leads the Directorate for Computer and information Science and Engineering (CISE). With an annual budget over \$1 Billion, CISE’s mission is to uphold the nation’s leadership in scientific discovery and engineering innovation through its support of fundamental research in computer and information science and engineering and transformative advances in cyberinfrastructure. While at NSF, Dr. Martonosi is on leave from Princeton University where she is the Hugh Trumbull Adams '35 Professor of Computer Science. Dr. Martonosi’s research interests are in computer architecture and hardware-software interface issues in both classical and quantum computing systems. Dr. Martonosi is an elected member of the American Academy of Arts and Sciences, and a Fellow of the Association for Computing Machinery (ACM) and the Institute of Electrical and Electronic Engineers (IEEE).

Date: Thursday, February 18, 2021, 8:00pm
Place: <b>ONLINE MEETING – registration required</b>
How to register:
• Send email to <b>PrincetonACM@gmail.com</b>
• OR Register on <b>Meetup.com</b> ( <a href="http://meetup.com/IEEE-Princeton-Central-Jersey-Section">http://meetup.com/IEEE-Princeton-Central-Jersey-Section</a> )
Information: Dennis Mancl (908) 285-1066
On-line info: <a href="http://PrincetonACM.acm.org">http://PrincetonACM.acm.org</a>

All Princeton ACM / IEEE-CS meetings for fall/winter 2020-21 will be held “on-line”. When you register for the meeting, you will receive an email with instructions for how to connect to the talk.

All Princeton ACM / IEEE-CS meetings are open to the public. Students and their parents are welcome. There is no admission charge.