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# Saturday Morning Quantum\*

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U.S. DEPARTMENT  
of **ENERGY**

Fermi National Accelerator Laboratory is managed by  
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# Workforce Development is the game!

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## QUANTUM FUNDING LANDSCAPE

# Chicago Quantum Campus Creates Job Pipelines



December 13, 2024  
BY QUANTUM NEWS



Chicago is set to host a quantum computing campus on the long vacant South Works steel mill in South Chicago thanks to PsiQuantum a leading quantum computing company. The project has been backed by local leaders, including Mayor Johnson, who have pledged to create pipelines for South Siders to access jobs

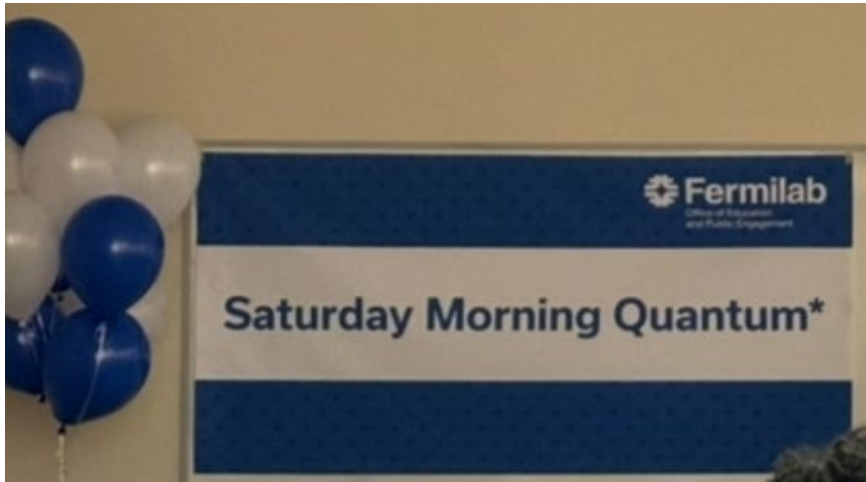


# Program Overview

Charge presented in October 2024



**SUPERCONDUCTING QUANTUM  
MATERIALS & SYSTEMS CENTER**



- Targeted high school students: 10-week pilot program series under the leadership of **Fermilab's EPE** director (SITPO) and in **partnership with SQMS Center** and support from **DOE**
- **21<sup>st</sup> Century active-learning**, interactive sessions, vocabulary immersion
- Focused on **inspiring next generation students into the field of high energy physics**, specifically centered about quantum physics, engineering, and **workforce development**
- Met ~ 40 high school students geographically and academically
- Connected > 40 students with Fermilab science
- **Facilitated** various STEM subjects **by scientists and subject matter experts**
- Students and stakeholders **toured Fermilab** to see and interact with scientists and quantum in practice
- Inspired more underrepresented minorities to enter the field of high energy physics
- Included **career discussions** as integral part of SMQ





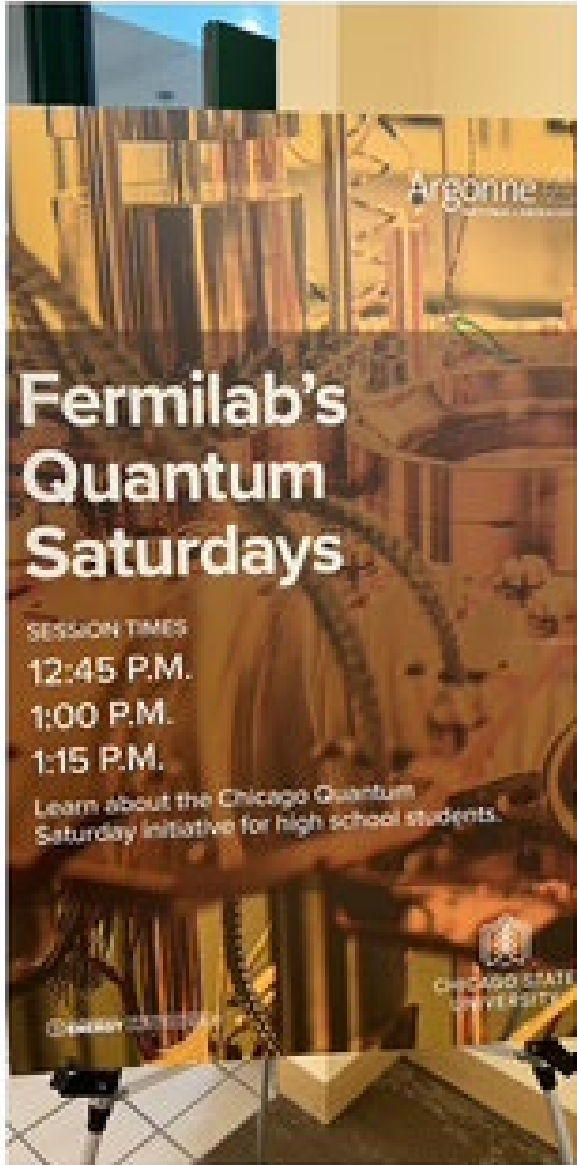
# SMQ\* Partner Engagements

## Saturday Morning Quantum\* in Chicago

- 7<sup>th</sup> and 10<sup>th</sup> Ward Aldermen Offices
- Afterschool Matters
- Chicago Mayor's Office
- Chicago Public Schools
- Chicago Quantum Exchange
- City Colleges of Chicago System
- Clayco
- Illinois Governor's Office
- Illinois Quantum & Microelectronics Park
- Olive Harvey College
- Olive Harvey Learning Center
- P33
- PsiQuantum
- Related
- World Business Chicago



# SMQ\* 1<sup>st</sup> Public Appearance at Quantum Summit



**Chicago State  
University**

**in partnership with**

**Argonne National  
Laboratory**



# SMQ\* Overview

## SMQ\* 10-Week Program

1.	<b>Welcome:</b> <i>Young-Kee Kim, Fermilab's Interim Director</i> <b>Introduction:</b> What does quantum, physics, and the scientific method <i>Don Lincoln, Fermilab</i>	6.	Quantum Computing Engineering: The multi-disciplinary aspects of building a quantum computer and enabling applications <i>Panel: Nick Bornman, Sabrina Garattoni, Julian Delgado, Fermilab</i>
2.	Navigating the Quantum Computing Landscape: Discover the opportunities emerging across diverse fields to harness quantum advancements for innovation and discovery. <i>Silvia Zorzetti, Fermilab SQMS</i>	7.	Superconducting Technology Exploring the evolution of superconducting technology, from applications in particle accelerators to cutting-edge advancements in quantum computing. <i>Daniel Bafia, Fermilab</i>
3.	Quantum Mechanics: Description of the behavior of sub-atomic particles in the quantum world. The dual nature of particles and the impossibility of simultaneously measuring things accurately. <i>Luis Mendoza, Fermilab EPE</i>	8.	<b>** Guided tour at Fermilab</b> <i>Program will include: 1 hour tour of SQMS, 1.5- hour quantum activities/experiments, Mr. Freeze cryogenics demonstration; 30 minutes logistics</i>
4.	Quantum Computing: What is a quantum computer? How can we use the quantum properties of matter to improve computing? How can we use a quantum computer to better understand the Universe? <i>Doga Kurkcuoglu, Fermilab</i>	9.	Cryogenic platforms for quantum computing Large-scale cryogenic platforms are needed to advance technologies critical for scaling up quantum computers to large-scale data centers. <i>Matthew Dubiel, Christopher James, Greg Tatkowski, Fermilab</i>
5.	<b>** Guided tour at Fermilab</b> <i>Program will include: 1 hour tour of Wilson Hall and Lederman Science Center and 1.5- hour quantum activities/experiments; 30 minutes logistics</i>	10.	Physics and Society: Particle and Quantum Physics and Impacts to Society Lia Merminga, Fermilab's 7 <sup>th</sup> Director <b>Closing Remarks/Graduation – Young-Kee Kim, Fermilab's Interim Director</b>



# SMQ\* by the numbers

- **More than 130** students across Chicagoland registered in two weeks
- **90** students were **accepted**
- **First-day enrollment** was **49** students
- **Sustained 40** students over the 10-week program, **82% success rate** in attendance (e.g., 8 or more sessions attended)
- **10** students received **certificates for perfect attendance** and **38** received **certificates of participation**
- **7 students secured employment** with quantum partners in Chicago
- **~15 Fermilab scientists and SMEs** participated in the program
- **Survey results, “Rate Your Knowledge and Comfort Level of Quantum (Scale: 1-5)”**
  - Pre: 3
  - Post: 4.47



# SMQ\* Highlights

## Student Feedback

- *I LOVED IT! In general, I like science! Quantum felt like a challenge that was difficult for me, but some aspects I understood better than other topics! It was great! Even the professors mentoring us told us their journey and shared their knowledge! WILLINGLY! It's great! I would love to participate again! I'll recommend this to other friends and other students interested in something they are willing to try and explore.*
- Most rewarding:
  - *The knowledge of what kind of job I could get with this sort of education.*
  - *No question is dumb, not everyone is expecting you to be smart! I also really enjoyed learning about Quantum Mechanics, quantum computing, and astronomy.*







# Continual development of the game at Fermilab!

"Teaching students about how the world works at the quantum level and how quantum technology could transform our life is imperative in this rapidly changing world," said Young-Kee Kim, interim director of Fermilab.



Forty Chicago Public School students celebrate and stand for a group photo with Fermilab Interim Director Young-Kee Kim and Chicago Mayor Brandon Johnson, center, during the graduation ceremony for the inaugural Saturday Morning Quantum program hosted by Fermilab. The event was held at the Olive Harvey College South Chicago Learning Center. Credit: Illinois Quantum and Microelectronics Park



# SMQ\* Next Steps

## Expand across Illinois?







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