

THE QUANTUM QUARTERLY

Q3 2020



THE QUANTUM DAILY
QUANTUM COMPUTING AND BEYOND

Welcome to the Quantum
Quarterly.

Here we cover the biggest
commercial news in the
Quantum Computing industry
over the last 3 months.

THE QUANTUM QUARTERLY

THE QUANTUM QUARTER IN BRIEF

After weathering the near simultaneous onslaught of a worldwide health crisis, an economic lockdown, a financial nose dive and protests and riots, you can understand the quantum community's uneasiness with storm clouds of a quantum winter. However, the third quarter comes to a close with signs of continued faith in -- and investment in -- quantum technologies.

A \$79 million Series C round for Rigetti Computing, led by Bessemer Venture Partners, was wrapped up in the third quarter. The U.S. White House's Office of Science and Technology announced a 30% increase in funding for technologies, with a bulk of that increase earmarked for quantum. Europe also dove in with several funding initiatives announced during the quarter.



Click this icon throughout this pres to see the full stories behind the brief



CONTENTS

The Big News
Capital markets
Our survey
About TQD

THE QUANTUM QUARTERLY



THE BIG NEWS



U.S. GOES ALL IN ON RACE FOR QUANTUM



During Q3, the U.S. government was particularly active, spreading around billions of dollars to fund the country's quantum technology efforts, including an \$75 million in NSF monies to establish Quantum Information Science Institutes. The White House announced that funding for quantum and AI projects will increase about 30 percent to \$2.2 billion. That's nearly \$700 million for quantum, according to sources.



BESSEMER LEADS \$79 MILLION SERIES C ROUND OF RIGETTI COMPUTING



rigetti

Rigetti Computing, a leading quantum computing startup and pioneer in hybrid quantum-classical computing systems, closed a \$79 million Series C financing led by Bessemer Venture Partners. Franklin Templeton joins the round with participation from Alumni Ventures Group, DCVC, EDBI, Morpheus Ventures and Northgate Capital.



FIRST QUANTUM-BASED IPO SOARS 924%, SMASHES FIRST-DAY RECORD



In what was billed as the first quantum IPO, A Chinese initial public offering for a quantum technology company soared nearly tenfold. QuantumCTek Co. develops information security products was listed on China's science and technology-heavy Star board. Financial experts familiar with the IPO said it indicates that the market is ready for quantum-based companies, another boost to the rapidly developing quantum startup community.



**CAMBRIDGE QUANTUM
COMPUTING, IBM LAUNCH
CLOUD-DELIVERED QC APP**



Cambridge
Quantum
Computing

Cambridge Quantum Computing (CQC) teamed up with IBM to launch the world's first cloud-based Quantum Random Number Generation (QRNG) Service with integrated verification for the user. Experts say this is an important first step toward quantum advantage. The application, developed by CQC, generates true maximal randomness, or entropy, on an IBM Quantum computer and can be verified. It's certified as truly quantum - and therefore truly and maximally random - for the first time.



D-WAVE SAYS ITS NEWEST 5,000-QUBIT QUANTUM MODEL IS BUILT FOR BUSINESS



D-Wave Systems Inc. announced the general availability of its next-generation quantum computing platform, incorporating new hardware, software, and tools to enable and accelerate the delivery of in-production quantum computing applications. The Leap™ quantum cloud service platform includes the Advantage™ quantum system, with more than 5000 qubits and 15-way qubit connectivity.



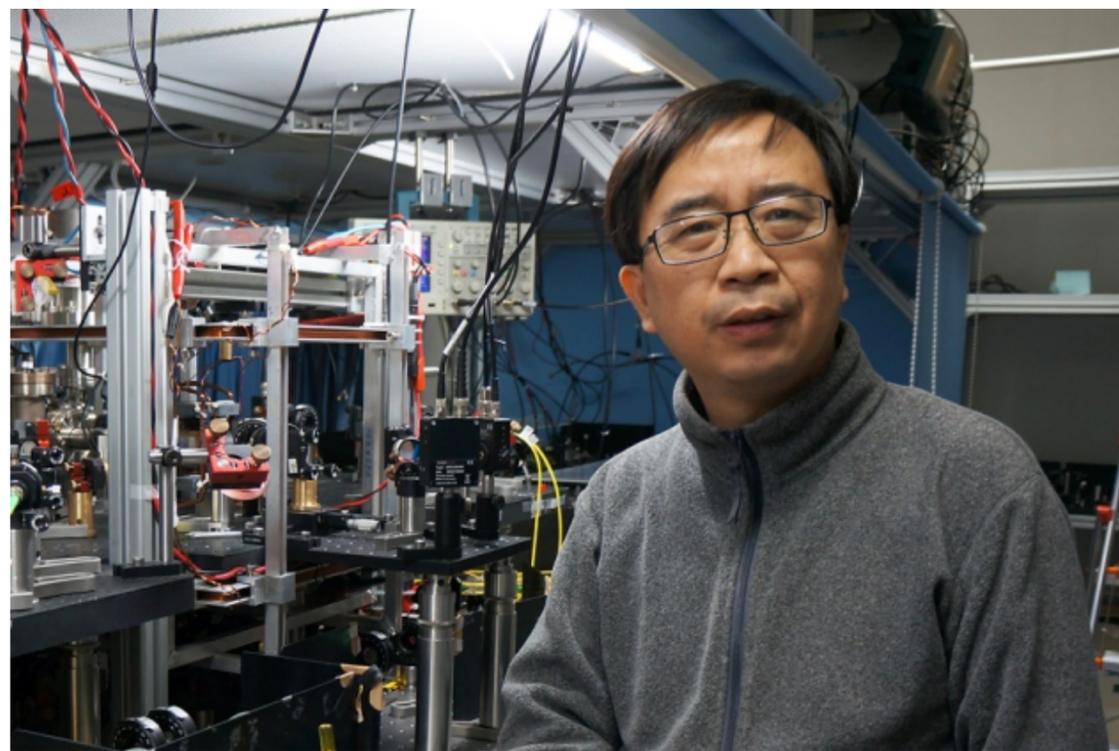
BAVARIAN STATE GOVERNMENT INVESTS 120 MILLION EUROS IN QUANTUM



The Bavarian state government is funding quantum science and technology (QWT) with around 120 million euros over the next two years. Prime Minister Markus Söder announced that an alliance of non-university research institutions, along with the Bavarian Academy of Sciences, would team up to create a Munich center for QWT to open up new opportunities in this field of innovation for Bavaria as a base for science and business.



CHINESE SCIENTIST REPORTS MILLION-FOLD IMPROVEMENT OVER GOOGLE'S QC



Pan Jianwei, a physicist from the University of Science and Technology of China, reportedly said in a lecture that his lab's boson sampling-type quantum computer had recently achieved “quantum supremacy” one million times greater than the record currently held by the QC built by Google. The claim has yet to be published or verified through peer-review. Jianwei is considered a pioneer in quantum entanglement and quantum satellite science.

THE QUANTUM QUARTERLY



CAPITAL MARKETS

\$109M

of new private capital flowing into
Quantum Technology companies in Q3
2020

22

investors involved in Quantum
Technology transactions in Q3 2020

METHOD

We developed a survey covering the community's opinion on key quantum computing milestones (e.g. practical quantum advantage), use cases and investment in the space.

We anonymized all the respondents and provided select quotes and data shared over Q3 2020.

This section includes select extracts and full the presentation can be accessed at the link below

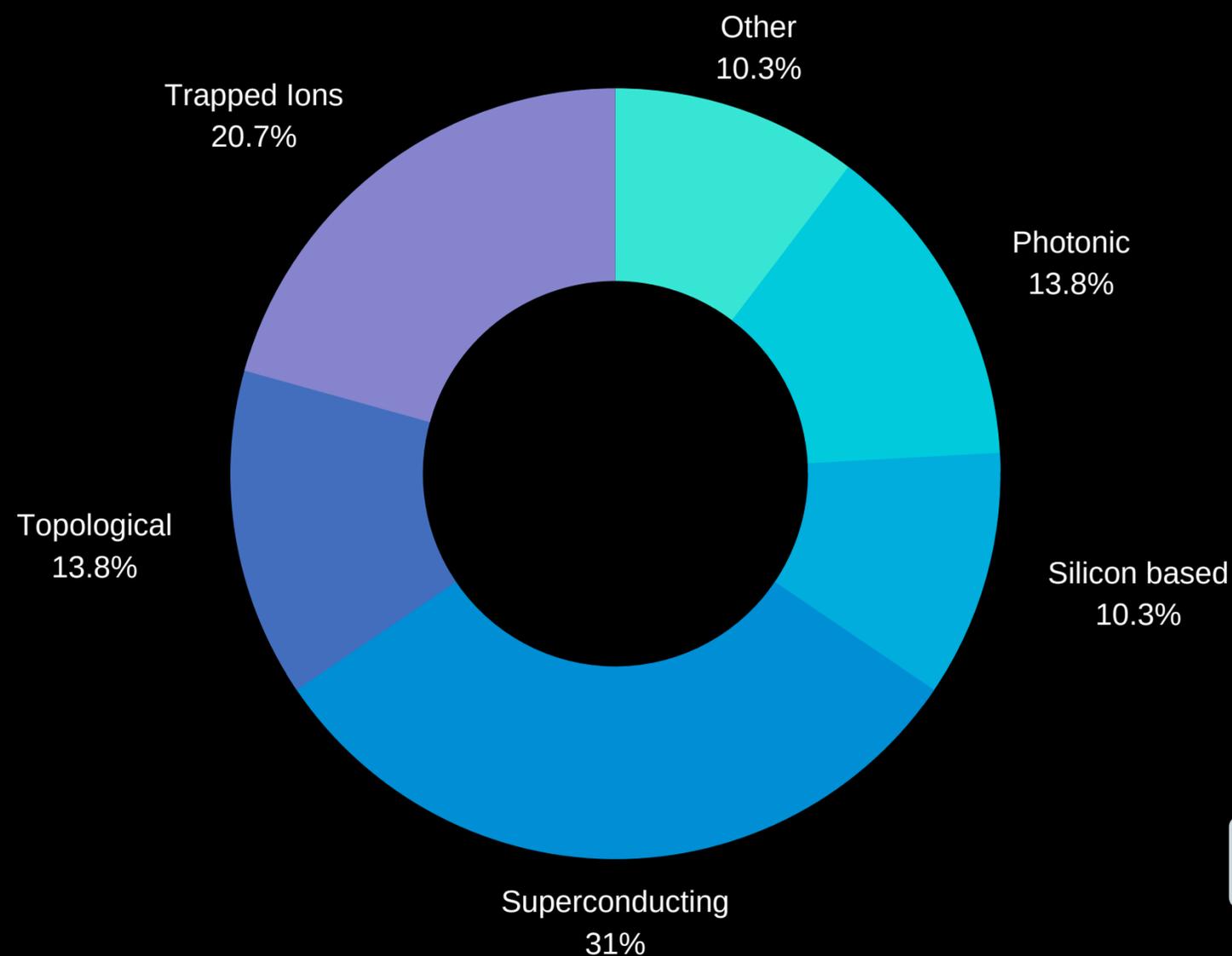


QUANTUM COMPUTING MILESTONES

What approach to qubits do you think will support the milestone of a Quantum Computer being able to solve a practical problem that a Classical Computer cannot?

TQD SURVEY

Data



Commentary

- Qubits are the basic units of quantum information
- Companies and researchers are pursuing a variety of approaches to implementing qubits
- Superconducting: Google, IBM, Rigetti, etc.
- Topological: Microsoft
- Trapped ions: IonQ, AQT, Honeywell, etc.
- Silicon based: Intel, Silicon QC, etc.
- Photonic: PsiQuantum, Xanadu
- Neutral atom: Atom, Pasqal

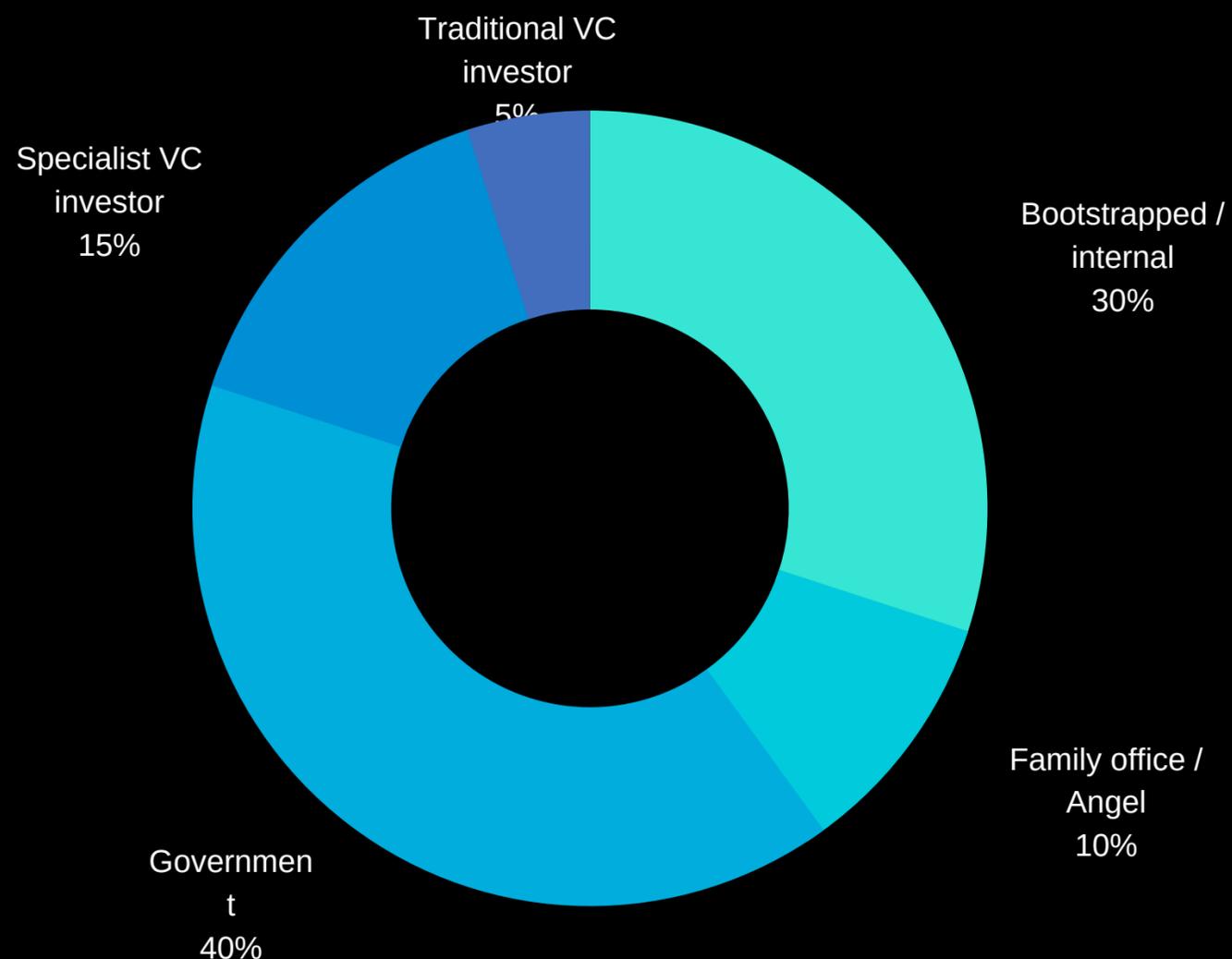


Read more about the various qubits implementations

QUANTUM TECHNOLOGIES INVESTMENT

Where do you expect your funding to come from?

Data



Commentary

- Only 5% of respondents expected their funding to come from a traditional VC investor
- Government funding is seen as particularly important in Quantum Technologies
- Whilst only 10% of respondent's expected their funding to come from angel investors and family office, our data shows a significant amount of early stage interest from both



Check out our investor market map by clicking the icon

QUANTUM TECHNOLOGIES ETHICS

What example use cases represent ethical or practical threats to society?

Comments

"Potential ethical considerations around those who benefit from the technology and those who don't" - Quantum Computing CEO

"Most of the applications can be used for good or bad" - Quantum Computing CEO

"Quantum computing to break encryption could have big impact, but it is still far off" - Researcher

Commentary

- Many industry stakeholders recognise the potential power that a Quantum Computer could bring to an organization who developed it
- This has led to some looking at Quantum Ethics in more detail
- Respondents focused on
 - The risks around unequal distribution of computational power and intellectual property
 - The applications which could allow users to crack traditional methods of encryption

ABOUT TQD



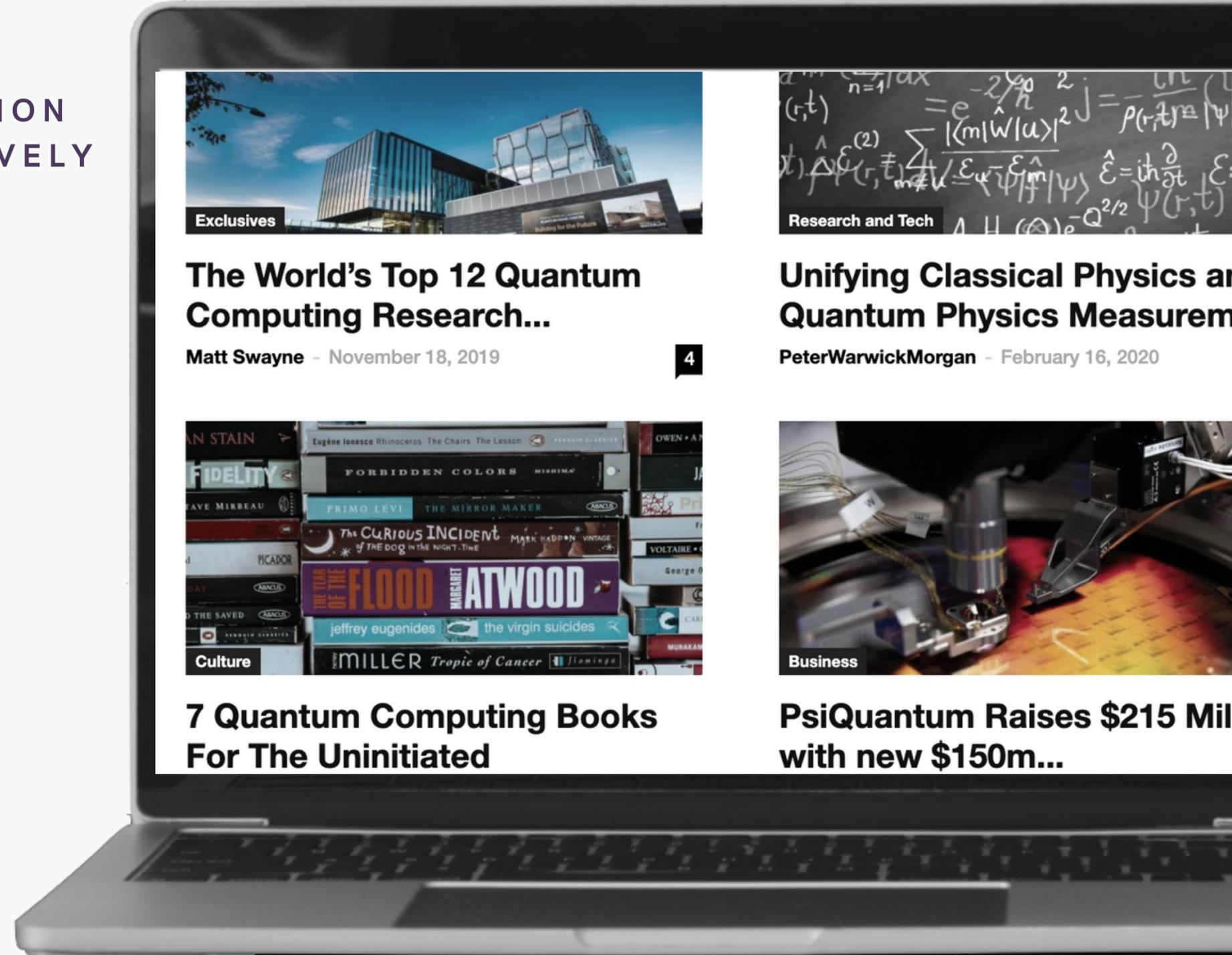
THE QUANTUM DAILY

QUANTUM COMPUTING AND BEYOND

THE QUANTUM DAILY

IS THE WORLD'S FIRST DIGITAL INFORMATION AND DATA PLATFORM DEDICATED EXCLUSIVELY TO QUANTUM COMPUTING

- Leading provider of content and information on the Quantum Computing industry
- Focus on the commercial applications of the technology
- News, analysis, exclusive interviews, long-form reviews and data (see next page)



DATA

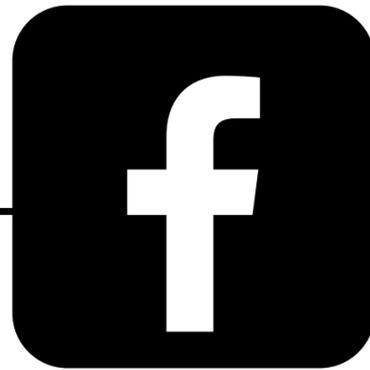
PRICE UPON REQUEST

- For Advertisers: Appear on our industry leading dataset being used daily by our community.
- For Companies: Map your market and competitors.
- For Investors: Complete industry map with key insights and subsectors profiling the various QC stakeholders and their technological developments all the way to capital market players and the investments they make.

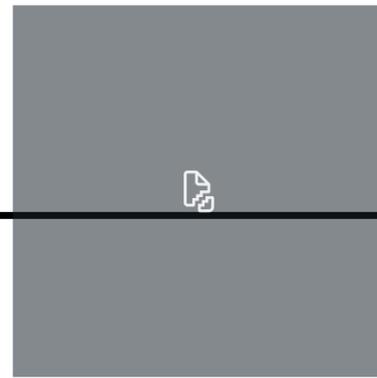
Logo	Name	Description	Primary Classification	Country	Details
	1QBit	1QBit develops and sells hardware-agnostic quantum software tools	Software	Canada	More Info
	Agnostiq	Agnostiq develops solutions to provide secure access to remote quantum computers	Quantum Access	Canada	More Info
	Alibaba Quantum Lab	Quantum Lab, part of Alibaba's DAMO Academy	Full stack	China	More Info
	Alice&Bob	Developing quantum error correction solutions	Hardware components	Paris	More Info
	Aliro Quantum	Aliro Quantum provides a hardware-independent toolkit for developers of quantum algorithms and applications	Quantum Access	United States	More Info



THE QUANTUM DAILY
QUANTUM COMPUTING AND BEYOND



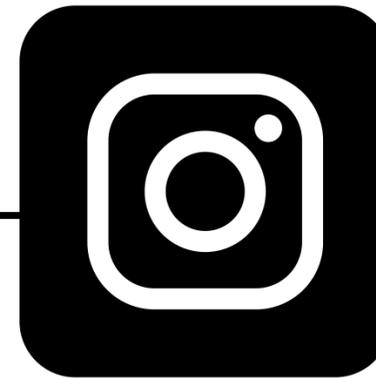
/thequantumdaily



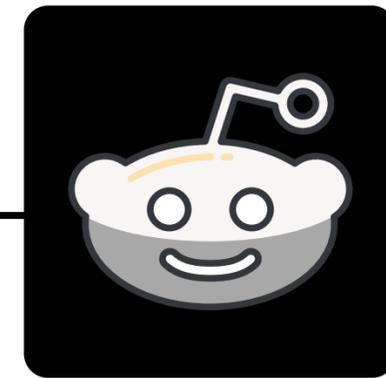
@quantumdaily



/thequantumdaily



thequantumdaily



thequantumdaily

THE QUANTUM DAILY



GET IN TOUCH

We would love to hear your feedback on our work.
Please don't hesitate to contact us.

hello@thequantumdaily.com