

# Q-NEWSLETTER

## HIGHLIGHT

### [Quantum-Powered Video Games](#)

Quantum computing has entered gaming: the startup MOTH launched Space Moths, a new multiplayer online game on Roblox, whose levels are generated on-demand by quantum processors. Developed with indie studio Onward Studios, the game uses MOTH's generative quantum-AI software on hardware from IBM, IQM and Finland's VTT research lab. In real time, quantum computers create unique playable worlds for each session. Debuting at Gamescom 2025, Space Moths showcases a fun application of quantum technology demonstrating that even today's quantum hardware can deliver novel interactive experiences by crafting unpredictable, dynamic game levels on the fly.

## RESEARCH

### [Time Crystals for Quantum Clocks](#)

Time crystals are quantum systems that develop a built-in, repeating rhythm: the system's collective state cycles in time in a stable way, a bit like a pendulum, but the "beat" comes from the system's own interactions rather than an external metronome.

A recent theoretical proposal shows how that rhythm could be used as the core of an ultra-stable quantum clock: you take a many-particle quantum system (they model many identical spins coupled to a non-equilibrium environment) and continuously "listen" to it by monitoring and counting its emission events as clock ticks. When the system enters

the time-crystal phase (it spontaneously settles into regular oscillations), those ticks become more regular and predictable, meaning you can get higher timing precision without paying as steep a penalty in noise as in simpler clock designs.

Time crystals could act as unusually robust quantum oscillators if engineers can reliably build, control, and read them out.

## MARKET

### [Preparation for Q-day Starts Now](#)

A Citi report is warning that quantum computing isn't just a far-future science topic, it could become a real risk for the financial system.

The big concern is that attackers may already be copying encrypted data today ("steal now, unlock later") and saving it to decrypt in the future, Q-day, once quantum computers are strong enough. This puts long-lasting data like financial records and government information at risk.

Citi also looks at what could happen if a major U.S. bank were hit badly enough that it couldn't use Fedwire (the Federal Reserve's key high-value payment network) for even a single day: payments could back up, other banks and businesses could be left waiting for money, and the disruption could spread quickly through the economy, potentially causing \$2.0–\$3.3 trillion of U.S. GDP (about 10–17%) at risk.

Quantum-safe encryption standards exist, but the hard part is actually rolling them out across lots of old, interconnected systems.

