

Meet the scientists putting superconductivity under pressure

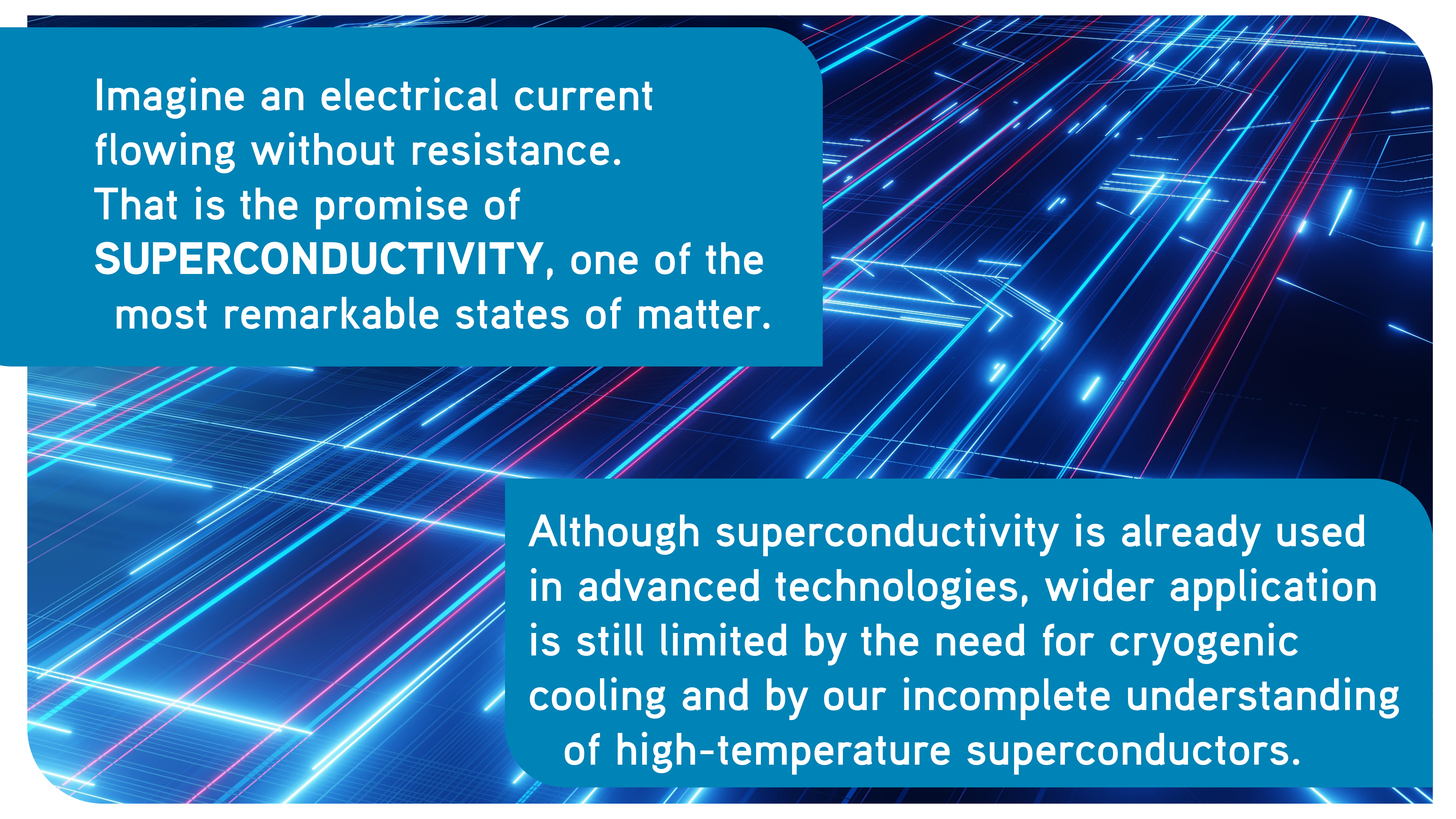
Paul Steffens

**Noé Joshua
Brehm**

**Daniel
Mazzone**

**Niels Bech
Christensen**

Tina Arh



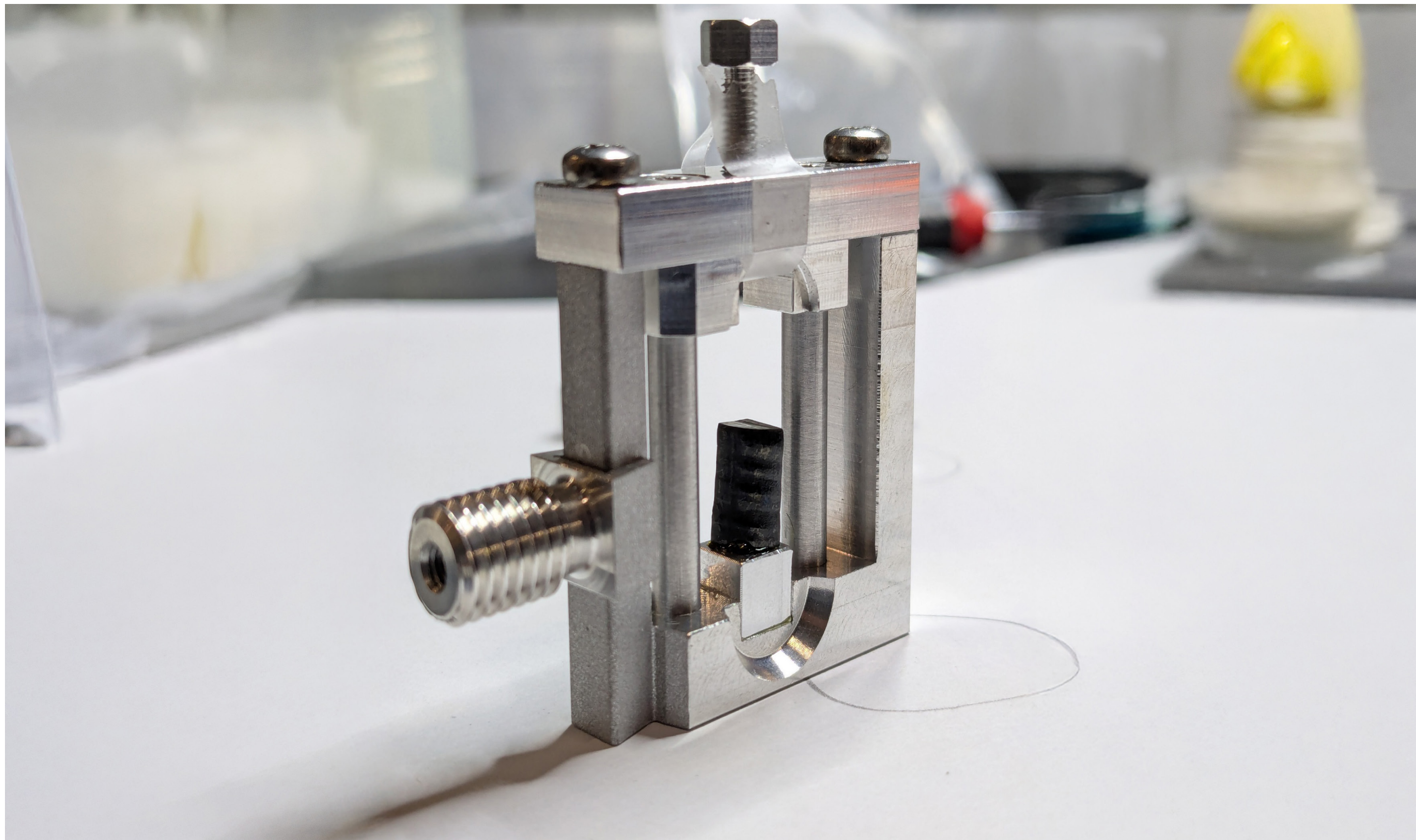
Imagine an electrical current flowing without resistance. That is the promise of **SUPERCONDUCTIVITY**, one of the most remarkable states of matter.

Although superconductivity is already used in advanced technologies, wider application is still limited by the need for cryogenic cooling and by our incomplete understanding of high-temperature superconductors.

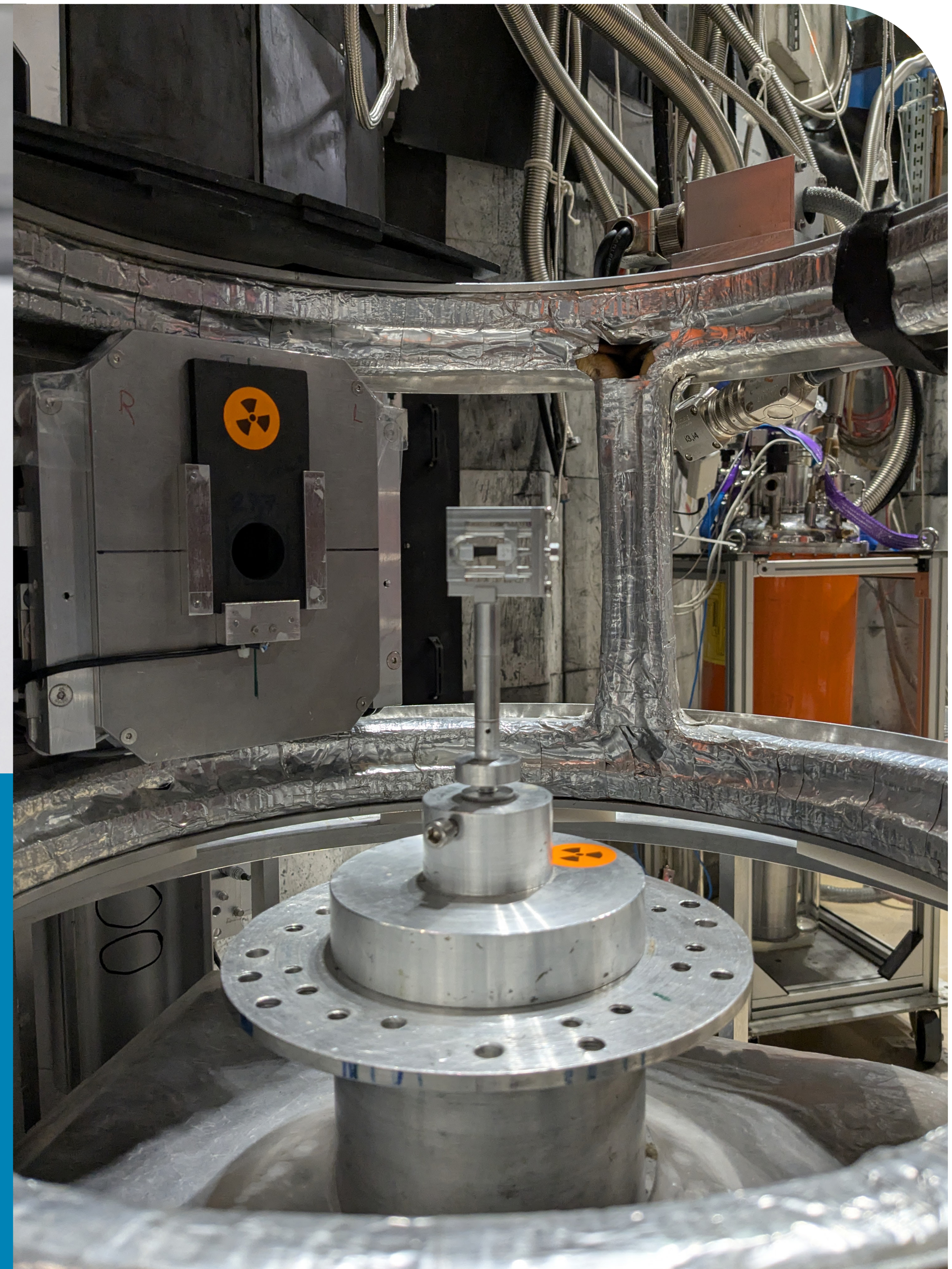
To get closer to understanding what makes superconductivity possible, the team studies cuprates, materials in which superconductivity is closely intertwined with other quantum states such as magnetism and charge order.



Gediminas
Simutis



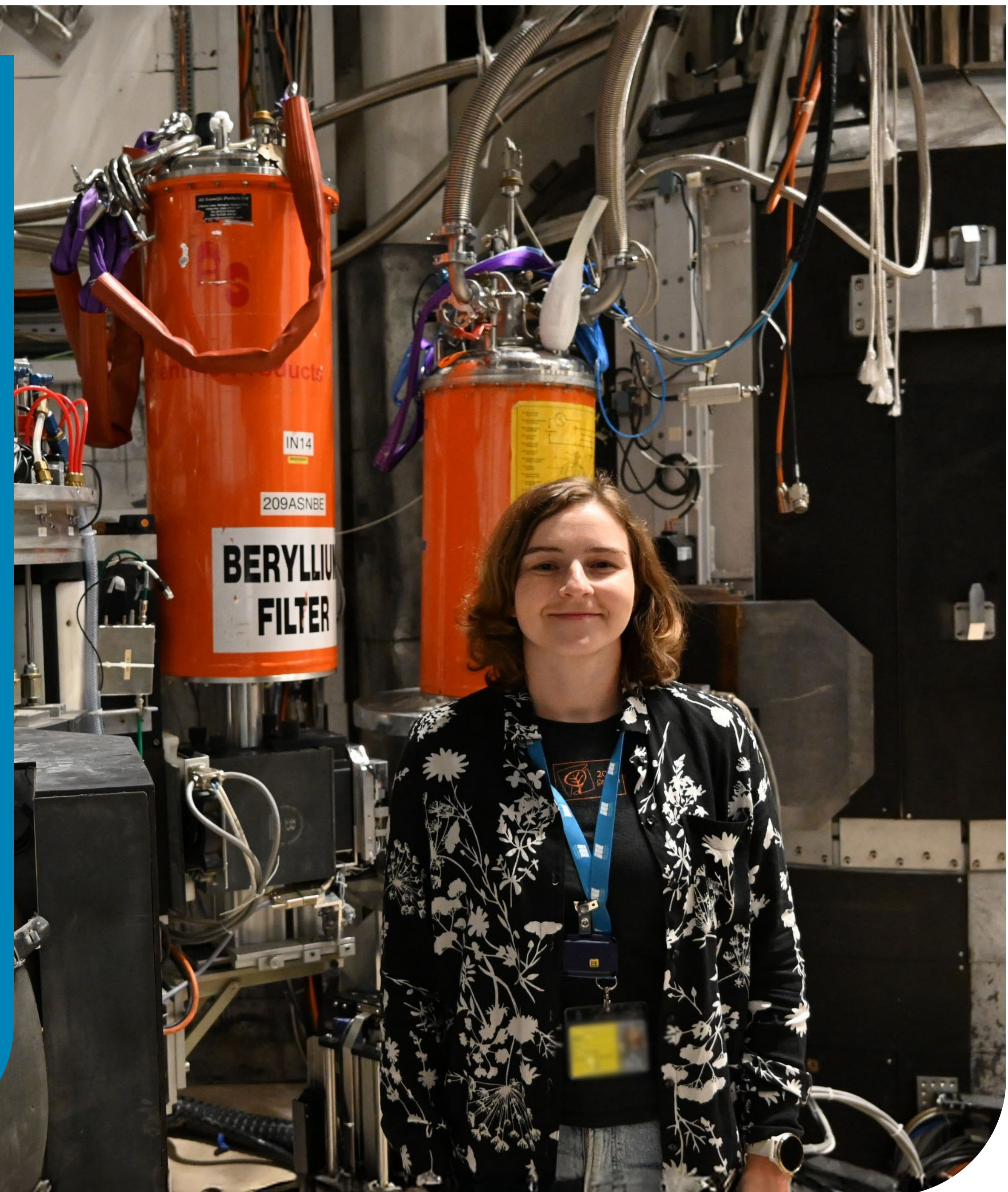
In this experiment, pressure acts as a control knob. By squeezing the crystal in one direction, the team can enhance superconductivity and observe how magnetic and charge orders respond.



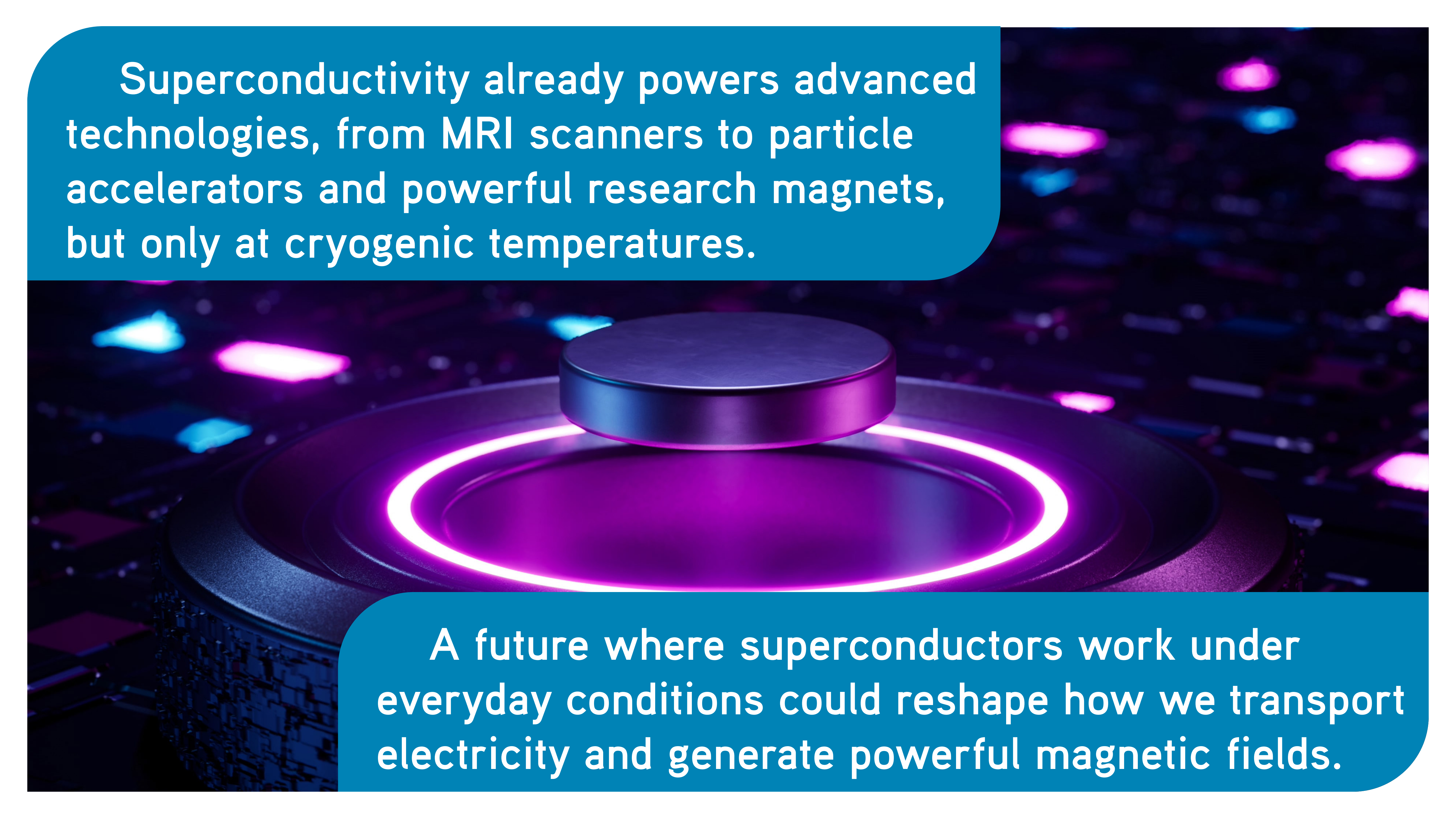
“ Neutrons are essential for studying cuprate superconductors because they can directly probe magnetism inside the crystal.

Here, they allow us to study how pressure affects magnetic order, spin excitations and the superconducting transition, all in one setup. ”

Tina Arh



Superconductivity already powers advanced technologies, from MRI scanners to particle accelerators and powerful research magnets, but only at cryogenic temperatures.



A future where superconductors work under everyday conditions could reshape how we transport electricity and generate powerful magnetic fields.