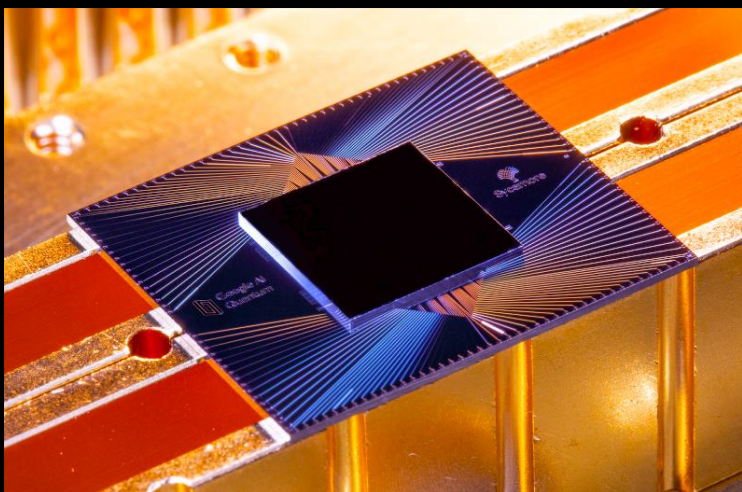


Quantum computing

Jaka Vodeb, Jure Brence, Blaž Škrlić, Vid Eržen, Leonard Logaric, Viktor Kabanov, Sašo Džeroski, Dragan Mihailovic

Our quantum computing group uses quantum annealers in order to study non-equilibrium quantum dynamics in systems which are intractable to simulate classically, enabling the discovery of new quantum phenomena and a better understanding of known ones. We will ascertain exactly which real-world materials are amenable to quantum simulation. We explore the applicability of quantum annealers as optimization problem solvers in areas such as machine learning, material science, biology, pharmacy and finance. Through studying the performance of a quantum annealer with machine learning methods we expect to learn about the possibility of applying quantum error correction to quantum annealers.



Quantum computing is now part of the broader field of quantum technologies (QT), where many research disciplines (quantum physics, optics, electrical engineering, computer science) and industrial activities (measurement and testing, control systems, laser engineering, communications, computer hardware and software) are intertwined. QT generates economic, strategic, scientific, technological and societal benefits (cybersecurity, logistics, artificial intelligence, finance, etc.). Morgan Stanley and the OECD estimate that the total QT market in the 36 OECD countries could grow to around USD 65 billion over the next 20 years.

