Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI

Swiss National Science Foundation

Swiss Quantum Initiative

Swiss Quantum Call 2024 – Granted projects

Alphabetical order

A quantum repeater node based on a broadband and highly multimode 171Yb:Y2SiO5 quantum memory

Corresponding applicant: **Afzelius, Mikael (GE)**

Keywords: quantum communication; quantum repeater and networks; quantum memory; rare-earth doped crystals for quantum applications; solid-state electronic spin systems

Project duration: 48 months, planned start date 01.08.2024

Granted amount: CHF 642504

Funding source: Transitional measure (SERI)

Superconducting terahertz circuitry powered by photonics

Corresponding applicant: **Benea-Chelmus, Ileana-Cristina (EPFL)**

Keywords: superconducting circuits, terahertz, vacuum field

Project duration: 48 months, planned start date 01.01.2025

Granted amount: CHF 917068

Funding source: Swiss Quantum Initiative (SNSF)

Analog quantum simulations of lattice gauge theories with bosonic modes

Corresponding applicant: **Chu, Yiwen (ETHZ)**

Further applicants: **Krstic Marinkovic, Marina (ETHZ) / Grimm, Alexander (PSI)**

Keywords: Quantum simulation; Superconducting circuits; Quantum acoustics; Lattice gauge theory

Project duration: 48 months, planned start date 01.08.2024

Granted amount: CHF 1998340

Funding source: Transitional measure (SERI)

Squeezed Levitated Quantum Nanorotors

Corresponding applicant: **Frimmer, Martin (ETHZ)**

Keywords: quantum measurements; mechanical squeezed states; quantum optomechanics

Project duration: 48 months, planned start date 01.12.2024

Granted amount: CHF 732979

Funding source: Transitional measure (SERI)

A two-dimensional ion-trap QCCD processor

Corresponding applicant: **Home, Jonathan (ETHZ)**

Further applicants: **Schmidt, Julian (PSI) / Hempel, Cornelius (PSI)**

Keywords: Ion traps; Quantum Computing

Project duration: 48 months, planned start date 01.08.2024

Granted amount: CHF 1847985

Funding source: Transitional measure (SERI)

Electrostatically Defined Quantum Dots in Semiconductor Monolayers

Corresponding applicant: **Kroner, Martin (ETHZ)**

Keywords: Quantum Dot; Quantum Information; Semiconductor Quantum Optics; Non-Classical Light

Project duration: 48 months, planned start date 01.10.2024

Granted amount: CHF 890200

Funding source: Swiss Quantum Initiative (SNSF)

Quantum materials and entangled phases for topological quantum computing

Corresponding applicant: **Kruchkov, Alexander (EPFL)**

Further applicants: **Neupert, Titus (UZH)**

Keywords: topological quantum computing; non-abelian anyons; Fractional Chern Insulators (FCI); tensor networks; projected entangled pair states

Project duration: 36 months, planned start date 01.08.2024

Granted amount: CHF 734574

Funding source: Swiss Quantum Initiative (SNSF)

QuantumLeap - New Frontiers in Nanoscale Quantum Sensing Technology

Corresponding applicant: **Maletinsky, Patrick (BS)**

Keywords: Quantum sensing; Quantum Technology; Nanotechnology; Nanofabrication; Diamond; Scanning probe microscopy; Magnetic imaging; Spin Physics

Project duration: 48 months, planned start date 01.01.2025

Granted amount: CHF 665270

Funding source: Transitional measure (SERI)

Certified Randomness Generation

Corresponding applicant: **Renner, Renato (ETHZ)**

Keywords: quantum information theory; entropies; randomness; quantum technology

Project duration: 48 months, planned start date 01.12.2024

Granted amount: CHF 739972

Funding source: Transitional measure (SERI)

Expanding the material portfolio for spin-based quantum technologies.

Corresponding applicant: **Rønnow, Henrik M. (EPFL)**

Keywords: quantum devices; Magnetism; Entanglement; Dipole interactions; cavity-magnonics; hyperfine spin; machine learning; crystal field; data mining; ab initio; qubit; rare earth

Project duration: 18 months, planned start date 01.08.2024

Granted amount: CHF 103740

Funding source: Swiss Quantum Initiative (SNSF)

RESQUE: Rethinking Quantum Simulations in the Quantum Utility Era

Corresponding applicant: **Tavernelli, Ivano (IBM)**

Further applicants: **Tacchino, Francesco (IBM) / Baiardi, Alberto (IBM)**

Keywords: Quantum computing; Quantum chemistry; Quantum dynamics; Hybrid quantum-classical algorithms; Materials science; Tensor Network States; Quantum Utility

Project duration: 48 months, planned start date 01.01.2025

Granted amount: CHF 1486768

Funding source: Swiss Quantum Initiative (SNSF)

Coherent feedback control in optomechanics

Corresponding applicant: **Treutlein, Philipp (BS)**

Keywords: coherent feedback; cavity optomechanics; quantum optics; quantum sensing

Project duration: 48 months, planned start date 01.08.2024

Granted amount: CHF 986921

Funding source: Swiss Quantum Initiative (SNSF)

Quantum Interconnects for Neutral-Atom Processors

Corresponding applicant: **Xu, Wenchao (ETHZ)**

Further applicants: **Renes, Joseph (ETHZ) / Pohl, Thomas (TU Wien, Austria)**

Keywords: Quantum interconnect; Modular quantum computation; Atom-light interface; Quantum optics; Rydberg atoms; Quantum error correction

Project duration: 48 months, planned start date 01.12.2024

Granted amount: CHF 1563617

Funding source: Transitional measure (SERI)
