

National Centre of Competence in Research

"PRECISION"



► Brief description

Precision measurements are a cornerstone of exact sciences. They play a key role in research, innovation and technological development, both in academia and industry. Since the fundamental redefinition of the International System of Units (SI) in 2019 and the introduction of new technologies such as optical frequency standards and frequency combs, measurement science is undergoing a true revolution, creating fresh opportunities in fields such as physics, cosmology, navigation, geology and sensing.

The National Centre of Competence in Research (NCCR) "PRECISION" will run a comprehensive research programme on precision measurements, focusing on the physical quantities of time and frequency. Its goal is to raise the accuracy and sensitivity of measurements to unprecedented levels and, in doing so, to explore previously unknown physical phenomena beyond the Standard Model of particle physics.

NCCR "PRECISION" is built on four pillars:

1. Fundamental physics: Precision measurements on simple atoms and molecules – including antimatter – to test physical theories and discover new phenomena.

2. Quantum state control: Targeted manipulation of particle systems to make measurements even more sensitive and precise.

3. Photonics technologies: Development of new optical components such as ultranarrow linewidth lasers and frequency combs to enhance precision and broaden the applicability of measurement systems.

4. Precision sensing: Use of atomic and solid state systems as high-resolution sensors, for example to detect minute electric and magnetic fields or for navigation and gravimetry (measurement of mass).

Thirty-two research groups from various institutions combine internationally recognised expertise in spectroscopy, atomic and molecular physics, optics and sensing.

Switzerland is already excellently positioned internationally in the field of precision measurement. To maintain and strengthen this position, long-term interdisciplinary research is essential. NCCR "PRECISION" provides the foundation to deepen our understanding of the laws of nature while generating new momentum for Switzerland's high-tech economy. Together with the Swiss Quantum Initiative, this NCCR is a key means of reinforcing this strategic area of research.

► Facts and figures

Total funding (2026–2029): CHF 36.01 million

Federal funding (2026–2029): CHF 16.97 million

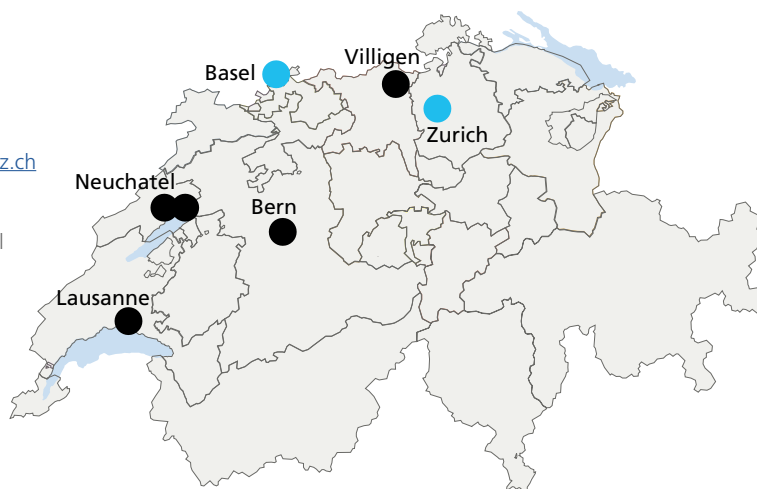
Host institutions: ETH Zurich, University of Basel

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Co-Director: Prof. Stefan Willitsch, University of Basel

Deputy Director: Prof. Yiwen Chu, ETH Zurich

Deputy Co-Director: Prof. Philipp Treutlein, University of Basel



● Host institutions (number of groups)

- ETH Zurich (16)
- University of Basel (8)

● Network (number of groups)

- EPFL (2)
- Paul Scherrer Institut (PSI) (2)
- Federal Institute of Metrology (METAS) (2)
- University of Neuchâtel (1)
- Swiss Center for Electronics and Microtechnology (CSEM) (2)

Further information

www.sbfi.admin.ch/national-centres-of-competence-in-research



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