

**International Workshop**  
**The 1967 Redefinition of the Second:**  
**Constructing Precision and Consensus in the Atomic Age**

**28-29 January 2027**

**University of Neuchâtel**

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In 1967, after two decades of experimentation and diplomatic negotiations over technological choices, the frequency of the hyperfine transition of the ground state of the cesium-133 atom was adopted as the basis for redefining the second. This shift from an astronomical to an atomic time standard was both a scientific breakthrough and a political achievement. It required the construction of consensus among metrological institutions, astronomical observatories, national laboratories, and international organizations. It also reflected a new configuration of science, politics, and industry in the postwar era, characterized by increased state support for strategic fields such as quantum electronics and by a growing commitment to international standardization. Amid Cold War tensions, atomic timekeeping emerged at the intersection of national interests and global cooperation, reshaping the governance of precision measurement.

This workshop explores the process leading to the 1967 redefinition of the second by bringing together scholars from the history of science and technology, STS, metrology, and related fields. It aims to foster a collaborative discussion on the epistemic, institutional, political, and technological dynamics that shaped this transformation in timekeeping. The workshop is organized as part of the SNSF-funded project Atomic Clocks at the Neuchâtel Observatory: Time, Quantum Technologies, and Innovation (1948-2001), which investigates the development of atomic timekeeping in Switzerland and its global implications.

We welcome contributions that explore the scientific, institutional, political, and material dimensions of the 1967 redefinition of the second. Submissions may engage with the following themes or related topics:

### **International Institutions and Global Contexts**

- The role of metrological bodies such as the Consultative Committee for the Definition of the Second (CCDS), the International Bureau of Weights and Measures (BIPM), the International Committee for Weights and Measures (CIPM), the General Conference on Weights and Measures (CGPM), and the International Time Bureau (BIH) in establishing consensus.
- The global history of the 1967 redefinition in the context of postwar international cooperation and Cold War politics.

### **Precedents and Innovations in Measurement Standards**

- The relationship between the redefinition of the second and earlier standardization efforts, such as the redefinition of the meter in 1960, highlighting continuities and shifts in procedures, criteria, and institutional strategies.
- Lessons drawn by historical actors from earlier metrological debates, and their impact on the consensus-making process.

### **Criteria for Choosing a Standard in the 1960s**

- The technical and political factors influencing the selection of an element or system for time standardization, including cesium, thallium, rubidium, hydrogen, and ammonia, as well as the evaluation of different atomic timekeeping methods, such as masers, atomic beams, and gas cells.

- The balance of key criteria shaping the final choice of standard, including stability, accuracy, reproducibility, portability, and dissemination.

### Laboratories, Observatories, and National Contexts

- The contributions of key laboratories, observatories, and national metrology institutes in testing, refining, and advocating for particular standards or technologies.
- Collaboration between institutions, including the transfer of technologies and skills, and efforts to coordinate and compare atomic clocks and atomic time scales.

### Material Culture of Atomic Clocks

- The experimental practices, technical gestures, and protocols adopted by scientists and engineers in the development of atomic clocks, and their role in reshaping metrological institutions within the postwar landscape of international standardization.
- The design and manufacturing processes of atomic clocks, and the impact of this material culture on theoretical and experimental models.

### Science, State, and Industry

- The role of collaborations between scientists, governments, and private industry in the development of atomic clocks.
- The contribution of private companies such as Atomichron and Hewlett-Packard to the commercialization and diffusion of atomic clocks, and their impact on the adoption of the cesium-133 standard.
- The influence of military needs, navigation, and telecommunications in creating opportunities and shaping incentives that affected the redefinition of the second.

### Impact and Legacy

- The immediate and long-term consequences of the 1967 redefinition for fields such as physics, astronomy, telecommunications, and navigation.
- The impact of the adoption of cesium on the development of other frequency standards, its legacy in contemporary metrology, and its role in ongoing debates about future time standards.

### Narratives and Imaginaries of the Atomic Age

- The incorporation of atomic clocks into the broader “peaceful atom” narrative promoted during the early Cold War.
- The influence of atomic clock development and promotion on public and institutional perceptions of atomic technologies, as well as their symbolic power in shaping contemporary understandings of precision and control.

#### Submission details

Abstracts in English or French of no more than 500 words should be sent to [ion-gabriel.mihailescu@unine.ch](mailto:ion-gabriel.mihailescu@unine.ch) by **1 September 2026**. Submissions from early career researchers, including graduate students and postdoctoral researchers, are warmly welcome.

Accommodation and meals will be covered for participants. Travel grants will also be available, within the limits of the workshop budget.

Papers presented at the workshop will be considered for publication in an edited volume. Selected participants will be asked to submit their contributions for publication by **September 2027**.

Please address any further inquiries to [ion-gabriel.mihailescu@unine.ch](mailto:ion-gabriel.mihailescu@unine.ch).