SYHQ 1: History of Quantum Mechanics I: Revolution, Representation, Reevaluation

Time: Monday 9:00–10:30 Location: ZHG010

Invited Talk SYHQ 1.1 Mon 9:00 ZHG010
Heisenberg's Umdeutung — •Alexander Blum — LMU München

What did Heisenberg actually think he was doing when he constructed the foundations of matrix mechanics in May/June 1925? Later on, he would famously (and vehemently) argue for a probabilistic interpretation against Schrödinger. But in the summer of 1925, months before Schrödinger would publish his wave equation, Heisenberg's interpretation was far more tentative and far more concerned with aspects of spectroscopy. In my talk, I will analyze what meaning Heisenberg initially ascribed (and didn't ascribe) to the matrix elements in the theory he was building.

Invited Talk SYHQ 1.2 Mon 9:30 ZHG010
Representing quantum physics: The role of notation in the construction of quantum mechanics — •Arianna Borrelli — Technische Universität Berlin

The relationship between physical notions and the mathematical structures expressing them is an issue of primary importance in the history and philosophy of science. Historical evidence suggests that, when investigating the relationship between physics and mathematics, one should pay attention to the notations mediating it: spoken or written words, drawings, symbols and more. The history of quantum mechanics offers a very good example of how new physics and new mathematics can emerge as one, and of how notation plays a central role in shaping both.

Invited Talk SYHQ 1.3 Mon 10:00 ZHG010
The Nobel committee's position on quantum mechanics: Nominations, evaluations and decisions — •Karl Grandin — Royal Swedish Academy of Science, Stockholm, Sweden

The recognition of quantum mechanics within the framework of the Nobel Prize in Physics illustrates not only its groundbreaking impact on theoretical physics but also the evolving criteria for scientific distinction in the early 20th century. Werner Heisenberg was awarded the 1932 Nobel Prize in Physics, received in 1933, for his foundational contributions to quantum mechanics, particularly the formulation of matrix mechanics. That same year, Erwin Schrödinger and Paul Dirac shared the 1933 Nobel Prize in Physics, acknowledging their work on wave mechanics and the relativistic quantum theory of the electron, respectively.

Nominations for Heisenberg and Schrödinger began as early as 1928, gaining momentum in subsequent years, reflecting the scientific community*s growing appreciation of their contributions. By contrast, Dirac*s nominations were initially fewer, highlighting differing trajectories in the recognition of theoretical achievements. In 1933, all three physicists received special evaluations from the Nobel Committee, with the first such evaluations for Heisenberg and Schrödinger emerging only in 1931.