

## 26. PAULI COLLOQUIUM, jointly with Physics Colloquium TU Wien

At the occasion of the celebration of „20 years Institut CNRS Pauli“,  
the Wolfgang Pauli Institut (WPI) & „Inst. CNRS Pauli“ (ICP), IRL2842, jointly with  
Technische Universität (TU) Wien, Faculty of Physics

invite you to the talk of **Alain ASPECT** (Inst. d’Optique – Univ. Paris-Saclay “Orsay”)

**Time: Friday, 21. June 2024, 14:30 – 16:00**

**Place: TU Festsaal, Karlsplatz 13, 1030 Wien**

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1) **14h30 welcome** : Norbert J Mauser (Director WPI & ICP and Uni Wien)  
Jens Schneider (Rektor TU Wien)

2) **14h35 introduction** : Thorsten Schumm (Directeur adjoint ICP and TU Wien)

3) **14h45 – 15h30** :

**Alain Aspect** (Orsay)

**“From Einstein and Bell to quantum technologies:  
entanglement in action”**



4) **15h30 – 16h00** : *get together with a coffee*

### **Abstract:**

As pointed out by Einstein, and confirmed by the violation of Bell’s inequalities, entanglement of separated particles is an extraordinary feature of quantum mechanics, suggesting some kind of non-locality. It is now used in quantum technologies.

After recalling what are Bell’s inequalities and their experimental tests, I will show how the notion of non-locality provides fruitful intuitions for some quantum communication methods.

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### Short Biography:

**Alain Aspect** (born 15 June 1947 in Agen, France) is a French (experimental) (quantum) physicist. Currently he is Professor at the Inst. d'Optique-Univ. Paris-Saclay and Professor at the École Polytechnique. He is an alumnus of ENSET Cachan (now ENS Paris-Saclay) and Orsay University and directeur de recherche émérite of the CNRS.

He received his “doctoral degree 3ième cycle” in 1971 and defended his “doctoral thesis” (“these d’état”, equivalent to “habilitation”) in 1983 at the Institut d'Optique, focused on experimental tests of the foundations of quantum mechanics (tests of Bell's inequalities, for which he was awarded the 2022 Nobel Prize in Physics along with John Clauser and Anton Zeilinger). After experiments on single photons, with Philippe Grangier (1984-86), he worked on laser cooling of atoms at the Kastler Brossel laboratory of ENS Paris, with Claude Cohen- Tannoudji, Jean Dalibard and Christophe Salomon. The group he founded at the Institut d'Optique in 1993 focuses on atomic quantum optics and atomic quantum simulators with degenerate gases.

Among the many interesting details of his CV we mention that after his doctorate he was teaching from 1971-1974 at the ENS Yaoundé in Cameroon, in „coopération“ (replacement for then compulsory military service), and that 2019 he was co-founder of the Start-up “Pasqual” aiming at a quantum computer based on neutral ultracold atoms.

Alain Aspect is a member of the Académie des Sciences, the Académie des Technologies and several foreign academies (Austria, Belgium, Italy, UK, USA).

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