

The testimony of Claude Cohen-Tannoudji

Winner of the Nobel prize for physics in 1997, Claude Cohen-Tannoudji¹⁰ has carried out major research with Alain Aspect. Here is what this exceptional physicist has to say about the man who was first his associate and then became his friend.

In 1984 you set up a research group focused on the cooling of atoms. Why did you call in Alain Aspect?

CCT: I had already known him for several years, having followed his work on Bell's inequalities, and I was a member of the jury when he defended his thesis. He was one of those researchers who is able to explore new avenues with intelligence and curiosity. Our work together at the Laboratoire Kastler-Brossel lasted for seven years and was extremely fruitful not only from a scientific point of view, but also from a human angle: on a day-to-day level, Alain Aspect is a very nice, warm and sincere man, and open with everybody. In fact, we've kept very close ties. I have excellent memories of that period.

A period during which you developed several processes for laser cooling of atoms...

Yes indeed. Alain especially concentrated on the "sub-recoil" cooling process (see above), although he also took part in all the other ongoing research, as there was a permanent exchange of ideas among the members of our small team. Although this process is not sufficient to reach the Bose-Einstein condensation threshold, it has led to some major fundamental steps forward, and has opened up a number of new issues. For instance, it has made it possible to establish fruitful connections with other areas of physics, such as the study of random processes dominated by rare events, now called "Lévy flights". So Alain has made a major contribution to this highly promising field, and both our teams are continuing to do research into metastable helium and into the condensates of this atom, which may lead to some nice applications in atomic optics and molecular physics.

Despite these successes, Alain Aspect again changed direction in 1992. What do you think of this rather adventurous approach?

That's the hallmark of true scientists. Science itself is in perpetual movement, and you need to take some risks. Of course, all Alain's research lies within the general framework of interactions between matter and radiation. But he has never wanted to confine himself to just one aspect of his discipline, which all goes to show his great sense of curiosity, particularly as his career has been studded with remarkable successes which have never altered his openness and receptiveness to others.

¹⁰ Claude Cohen-Tannoudji is honorary professor at the Collège de France and a member of the French Academy of Sciences. He carries out research at the Laboratoire Kastler Brossel (ENS /CNRS/Univ. Paris VI).