

Obituary

Gilbert Grynberg (1948–2003) **Editor-in-Chief**

The Editors of EPJ communicate the death of Gilbert Grynberg, who was serving in Section D as one of the Editors-in-Chief. Gilbert had been affected by a long illness, that he accepted with humour and style, avoiding to mention it or to refrain from his duties. We remember him as a fine scientist and a reliable friend, very active from the early days of our Journal, that we are proud to see appreciated in the international scientific community.

We of EPJ D have asked two scientists who were very close to Gilbert's activity to provide the enclosed scientific biography.

The Editorial Board and Office of EPJ D
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Gilbert Grynberg started research by a “thèse de 3^e cycle” on the dressed atom under the supervision of C. Cohen-Tannoudji from 1970 till 1972. Then, B. Cagnac was the supervisor of his “thèse d'État” on 2-photon Doppler free spectroscopy, which he defended in April 1976: the group formed of F. Biraben, B. Cagnac and G. Grynberg, was the first to observe 2-photon Doppler free spectra in 1974, thus gaining an immediate international recognition. Then, with the help of E. Giacobino who joined the group in 1975, they have illustrated the power of 2-photon Doppler free spectroscopy in a wide range of cases. Gilbert's talent for theoretical work was already striking. During his whole career as a leader of an experimental physics group, his bright theoretical contributions allowed him to pioneer a huge amount of very elegant experiments.

In 1979, Gilbert got interested in non-linear optics in atomic vapours. He first studied the bistability in 2-photon spectroscopy of a gas placed in a Fabry-Perot cavity and during the 80's, with the help of M. Pinard, Gilbert produced a series of important results in phase conjugation and degenerate four-wave mixing in atomic vapours: the great advantage of atomic vapours for non-linear optics is due to the fact that their theoretical description can be made almost without any approximations and, in this way, using the dressed atom picture, Gilbert was able to clarify several difficult and controversial questions.

Around 1990, Gilbert started to apply his knowledge of non-linear optics to two new domains:

- pattern formation and instabilities in light propagation in non-linear media, with, as usual, experiments and a very complete analysis,
- ultra-cold atoms in optical lattices. The starting point was a collaboration with C. Salomon to interpret Raman signals observed in a laser trap. At this time, Gilbert got especially interested in the spatial distribution of atoms cooled in laser fields. His studies, along with those in the group of W.D. Phillips, gave birth

to a new state of matter called optical lattices. Gilbert was able, with the help of Ph. Verkerk, to build a very active group with many young Ph.D. students and this group has thoroughly studied the dynamics of atoms in optical lattices, both experimentally and theoretically. He always stood at the top of the international competition on this subject, until the very last weeks of his life.

A few names of collaborators appeared in this brief note and many other names have not been quoted, for lack of space, in particular the names of about 20 Ph.D. students as well as those of a few post-docs who worked with him. Several other research subjects should have been quoted: optical gyros, BEC with excitons, search of superheavy hydrogen using laser detection, quantum correlations and squeezing of light, polychromatic artificial star.

During his research career, Gilbert had a CNRS position and he worked in the Kastler-Brossel laboratory (École Normale Supérieure and Université P. et M. Curie), excepted for a few years around 1980, during which he was a member of the Laboratoire d'Optique Quantique, at École Polytechnique. Gilbert has written almost 200 scientific papers, which are very clear, with elegant explanations of the difficult points and he gave many brilliant talks. The wide range of subjects addressed by Gilbert during his career highlights his exceptional imagination, his outstanding ability to relate fields that are usually disconnected, fruitfully exploiting ideas that were developed before in a different context. In 1996, Gilbert Grynberg was the award-winner of the Jean Ricard prize, one of the most important prizes of the French Physical Society. This prize was given to him in recognition of the exceptional results obtained during his whole career and especially, for those concerning optical lattices.

Finally, Gilbert had many other activities, the most important ones being his teaching activities. Gilbert has been professor at École Polytechnique for 25 years and he has also written several books. C. Cohen-Tannoudji, J. Dupont-Roc and Gilbert wrote two books for an advanced level *Introduction à l'électrodynamique quantique* and *Processus d'interaction entre photons et atomes* (InterÉditions/Éditions du CNRS), which also appeared in english translation *Introduction to quantum electrodynamics* and *Atom-photon interactions* (Wiley). More recently, Gilbert, with A. Aspect and C. Fabre, has written a book for the graduate level: *Introduction aux lasers et à l'optique quantique* (Ellipses).

We would like to give some more information on Gilbert's personality: Gilbert was very enthusiastic, cheerful and he had a strong sense of humour. Until the last two years, one could not guess that he was fighting against his illness since the early 70's. During this fight against illness, Gilbert demonstrated an exceptional courage, recognised by everybody who approached him during this hard period.

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