

## Roger Maynard 1938–2015

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Received 31 January 2017

Published online 25 May 2017



This EPJ ST issue has been published under the auspices of the Société Française de Physique



Roger Maynard passed away in May 2015. With his disappearance, we have lost a great scientist, a skilful and appreciated professor, and an unprecedented supporter and animator of science.

This Special Issue of the European Physical Journal is published as a tribute to his scientific activity. The editorial board is composed of scientists who have worked closely with him, and the authors have all interacted with Roger Maynard in the course of their research. The high scientific quality of the contributions, as well as their broad scope, demonstrate the impact that Roger has had in different research communities.

Roger Maynard's scientific career covered a broad range of topics. Roger initially started working on the as yet unsolved problem of glasses, on amorphous matter and on spin glasses. These problems of "ill-condensed matter" are still among the most challenging in modern physics. He made significant contributions to what we summarize these days as "Percolation, Frustration and Localization". The combination of these three apparently remote topics turned out to be extremely fruitful in making progress in our understanding of glasses and many other topics. Today we can find them in almost every field of physics. These efforts culminated in the highly successful Summer School on "*Ill-Condensed Matter*", that he organised – with Roger Balian and Gérard Toulouse – in 1978 at the *École de Physique des Houches*. Many top physicists in this field were present: Pierre Gilles De Gennes, David Thouless and Philip Anderson, to cite a few who were later awarded the Nobel Prize for related works. This famous *Les Houches* session marked the beginning of an intense period of activity in the field. It has also provided an exemplary formula for the present generation: Senior scientists interacting with young scientists for one week or more on a rather informal basis – with ping-pong and skiing also on the program – to discuss new developments in physics.

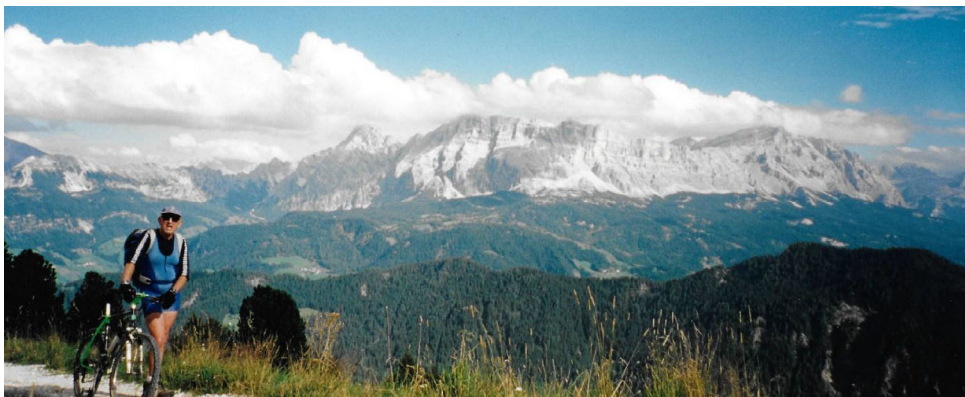
The challenging problem of anomalous low temperature heat transport in glasses was an important step in the career of Roger Maynard. Here again, he looked for solutions outside the mainstream and proposed that Anderson localisation of phonons, a phenomenon almost exclusively relevant to electronic systems at that time, could be an important factor. This idea did not only prove to be extremely fruitful, it also opened up the field of localisation to arbitrary waves in random media. This is a major topic in this Special Issue.

His crucial involvement in the French CNRS research networks POAN (1994–1998), PRIMA (1998–2002), IMCODE (2002–2010) and MESOIMAGE (2010–2016) on mesoscopic and applied wave propagation of all kinds has been the foundation of many Ph.D. theses, and has led to a large number of successful international and interdisciplinary collaborations. Most papers published in this Special Issue find their roots in this context. They have in common that they concern work that held his deepest interest, and to which he has contributed actively. They are either of an experimental, numerical or theoretical nature, and some are even a mixture of all three. Theoretical papers were clearly inspired by experiment. Amongst them are a few papers on superconductivity, on new advances in mesoscopic acoustics and acoustic imaging in disordered media, several related to multiple scattering, coherent backscattering, chaos and Anderson localisation of acoustic, elastic and electromagnetic waves, as well as quantum optics of random media. Two review papers have been published on topics that have had a large impact and to which Roger devoted a lot of time: Levy flight in statistical mechanics and time-reversal of waves in disordered media. Many of these works have been or are major scientific breakthroughs. Roger Maynard potted many small trees in many different communities, watered them in his unique charismatic way, and discretely watched them grow, applauding the scientists at the side-line who at some point realised that they had all the skills to do it, but that they would never have had the opportunity to do so without him.

Roger Maynard was a professor of theoretical physics at the University Joseph Fourier in Grenoble. He was always very close to experiments, and actively involved in the conception of new physics. One example is the experiment of coherent backscattering with light, carried out in Grenoble during the mid-eighties in collaboration with Georg Maret, Pierre-Etienne Wolf and Eric Akkermans. This experiment demonstrated beautifully that interference of light can still happen after thousands of scattering events. In 1988 he founded what would later become the *Laboratoire de Physique de Modélisation des Milieux Condensés*, a joint research unit of the University Joseph Fourier in Grenoble and the national CNRS. Roger Maynard understood very early the crucial role that numerical simulations and applied mathematics would be playing in the study of disordered systems.

During the nineties, he became involved in university administration, taking up the duty of Vice-President of Research at the University. Regrettably, he did not live to see the creation of one university “Grenoble-Alpes” in Grenoble, created on January 1, 2016. Around the year 2000, he accepted several duties related to the rise of nanosciences at the Ministry of Research. In France, he became known as the *Seigneur des Nanos*.

In 2005, the World Year of Physics, Roger Maynard was elected President of the French Physical Society, under whose auspices this Special Issue is published. For more than 5 years he chaired the board of the French academic publisher EDP Sciences, founded in 1920 and for more than 80 % owned by the French Physical Society. EDP Sciences, Springer and the Società Italiana di Fisica together publish the European Physical Journal. Roger Maynard pleaded for an active role for researchers in all aspects of the editorial process. He actively participated in debates about open access, green archives, peer review, the cost of publications, and plagiarism. The economic model of the present Special Issue is Gold, i.e., open access to all readers facilitated by author-paid publications, whose scientific quality is guaranteed by a peer review organised by a highly qualified editorial board and a significant role of the publishing house. This is not a perfect model, but is in many ways better than that of reader-paid subscriptions. Roger would have applauded the present initiative, but also defended the point of view that research organisations and universities have the responsibility to deal with all financial matters related to publishing. Scientists should be bothered with science only, but publishing a paper constitutes the end of a scientific chain and is thus part of science.



His last scientific passion was the arrow of time. Shortly before his death, in April 2015, he gave a remarkable seminar in Rennes on this issue that can be found on [YouTube](#). He left an unfinished manuscript that was completed and published

by his close collaborators Mathias Fink, Michel Le Bellac and Michèle Leduc (*Le temps: mesurable, réversible, insaisissable?* EDP Sciences, 2016).

The legacy of Roger Maynard will live on.

Grenoble, March 2017

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