

Pekka Johannes Lahti—60th Birthday

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On 26 December 2008, Pekka Johannes Lahti celebrated his 60th birthday. To mark this occasion, two special issues of this journal have been set aside to collect contributions from Pekka's students, friends and colleagues to pay tribute to his scientific achievements.

Pekka's research interest has primarily been in conceptual and mathematical foundations of quantum mechanics. He has written well over 100 publications and a number of books on this subject. In a career spanning until now three decades, he has been influential in many ways.

In his work of the 1980s, Pekka was ahead of his time in studying axiomatic approaches to quantum mechanics in a way that is now becoming a focus of attention in the quantum foundations-quantum information interface. He undertook a thorough analysis of the fundamental quantum principles—the superposition principle, Heisenberg's uncertainty principle, and the complementarity principle—for which he provided different relevant formalizations within the quantum logics and convexity frameworks. This line of research culminated in the presentation of quantum mechanics as a theory of complementarity, laid down in two major works in collaboration with the late Sławomir Bugajski. In this period Pekka also made contributions towards clarifying the probability structure of quantum mechanics.

In the 1990s, he turned to problems and applications of quantum measurement theory and the elucidation of operational concepts of quantum mechanics such as the idea of joint measurability of noncommuting observables, and over the past decade his main interest was the mathematical clarification of the notion of symmetry in quantum mechanics and its role in defining quantum observables such as covariant

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phase and phase space observables. In recent years Pekka made insightful contributions to the theory of quantum state tomography, pursuing mathematically rigorous applications of the method of moments.

With his quiet enthusiasm and commitment to his subject and his characteristic unassuming natural authority, Pekka has been an inspiration to many researchers in the field—mathematicians, physicists and philosophers alike. He has initiated and maintained numerous fruitful collaborations with colleagues in Poland, Italy, Germany, the USA and UK, among others. He held a prestigious Alexander von Humboldt Fellowship which enabled him to make extended visits to Cologne, resulting in many years of close cooperations with P. Mittelstaedt and one of us (PB). Other focal points of intensive contacts and interactions include Bratislava (A. Dvurečenskij, S. Pulmannová), Genoa (E. Beltrametti, G. Cassinelli), Katowice (S. Bugajski), Princeton (B. van Fraassen), and Warsaw (M. Maczyński). Pekka was the driving force behind (and co-organiser of) the seminal series of Joensuu Symposia on the Foundations of Modern Physics of 1985, 1987, 1990, with continuations in Cologne 1993 and Helsinki 1994–1995.

Over the years Pekka has attracted a number of excellent doctoral students who are now postdoctoral researchers or lecturers producing their own work at high levels of rigour in mathematical physics. Anyone who has the good fortune to have worked with Pekka will not only have been impressed by his intensity and determination in his quest, which he modestly describes as “trying to understand quantum mechanics”, but also deeply affected by his kindness and humanity. It is a great pleasure to join the contributors to this Festschrift in congratulating Pekka Lahti on his 60th birthday and wishing him many happy and productive years to come.