

LAUDATION

Ulrich Eckern's 60th birthday*Gerd Schön*

Ulrich Eckern began studying physics in 1970 at the TU Dortmund. He was one of the – few – first-generation physics students at this new university, who compensated for the lack of established student life by intensive interactions with the new professors and assistants (like me), well-developed social contacts, and memorable parties. For his diploma thesis and PhD work Ulli joined the group of Albert Schmid and moved with him to Karlsruhe University in 1976. Topics of Ulli's early work were, e.g., nonequilibrium superconductivity such as charge imbalance relaxation processes, investigated in a collaboration with John Clarke and Mike Tinkham [1], and the stability of nonequilibrium states in driven systems [2]. Similar phenomena in superfluid ^3He were studied in his PhD thesis [3], which he defended in 1979 with the degree 'summa cum laude'.

Soon thereafter Ulli moved for two years to Cornell University to work as postdoc with Vinay Ambegaokar. Together we explored dissipative effects in macroscopic quantum mechanical systems, specifically the influence of quasiparticle tunneling on the quantum dynamics of low-capacitance Josephson junctions [4]. For the next few years, dissipation and relaxation processes were the central issue of Ulli's work back in Karlsruhe, with further applications to superconductors, charge-density wave systems [5], solitons,

and condensed Bose gases, the latter also being the topic of his 'habilitation' thesis [6]. In 1989 Ulrich Eckern received the Walter Schottky Prize of the German Physical Society (shared with W. Zwerger and me). Together with Albert Schmid he discovered that vortices in Josephson junction

arrays or granular superconducting films behave as quantum mechanical particles with a mass (depending on the capacitances) and subject to forces and dissipation [7]. Moreover, he helped resolving the controversial issue about the magnitude of persistent currents in small normal-metal



Ulrich Eckern (Photo by U. Eckern, 2007)

rings by investigating the effects of the electron-electron interaction [8].

In 1993 Ulrich Eckern was appointed full professor at the University of Augsburg. In the following years he contributed substantially to the scientific success and visibility of his department by establishing – as founding member and principal investigator – several major DFG-funded research projects. The central issues of his scientific work were the electronic properties of model systems as well as of real materials. For example, the role of randomness on the ground state properties of integrable models were studied successfully with the help of the density matrix renormalization group technique [9]. Particles obeying fractional statistics were treated with the Bethe ansatz [10]. In order to investigate electronic and magnetic properties of real materials, Ulli and his group employed density functional theory (DFT) [11]. In a model calculation they studied the question whether an ‘exact’ – or at least an ‘improved’ – DFT might be able to quantitatively describe charge transport through inhomogeneous systems [12]. The present volume of *Annalen der Physik* provides samples of related work on these modern topics.

Beyond that, Ulrich Eckern engaged substantially in many of the academic, honorable but time-consuming managing duties. He was Managing Director of the Institute of Physics (1993–95, 2003–06), Dean of the Mathematics and Natural Sciences Faculty (1996–98), member of the Senate (for several years), as well as Prorector (1999–2001) of the University of Augsburg. In addition, Ulli served for six years as member of the Council of the German Physical Society, and as member of the Hertha Spöner Prize Committee. Recently,

he was elected into the DFG Review Board for Theoretical Condensed Matter Physics.

In 2003 Ulrich Eckern started, together with the mathematicians Bernd Aulbach and Saber Elaydi, a noteworthy initiative, “ECCE” [13], which aims at establishing a center of excellence in mathematics and theoretical physics in Palestine. For a few years, this project has been supported by UNESCO; a UNESCO Chair has been established at Birzeit University, and a bi-annual conference series on modern trends in mathematics and physics was initiated in 2008.

Last but not least, Ulrich Eckern acted for several years as Editor in Chief for the *Annalen der Physik*. With his deep understanding of physics, his many good national and international contacts, and with his persistence and care he contributed in an invaluable way to the ongoing success of this prestigious journal with 222 years of history. Beside many special issues that he organized (see [14]), he also engaged in modernizing the journal. During his editorship the journal became available online for the readers, a modern online manuscript submission system has been implemented, and the journal volume counts were reorganized to ease the further development of the journal [15].

On 9 March Ulrich Eckern turned 60. It is a pleasure for us to congratulate him on this occasion, and to devote this issue of *Annalen der Physik* to topics which are close to his scientific interests.

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