Dietrich Stauffer (1943–2019)

Hans J. Herrmann
PMMH, ESPCI, 7 quai St. Bernard
75005 Paris, France
and
Dept. de Física, Universidade Federal do Ceará
60.51-970 Fortaleza, Brazil
hans.herrmann@espci.fr

Paulo Murilo C. de Oliveira
Instituto de Física, Universidade Federal Fluminense
24210-346 Niterói, RJ, Brazil
oliveira.paulomurilo@gmail.com

Andreas Schadschneider
Institut für Theoretische Physik,
Universität zu Köln,
Zülpicher Str. 77, 50937 Köln, Germany
as@thp.uni-koeln.de

Received 25 May 2020
Accepted 26 May 2020
Published 10 July 2020

Prof. Dr. H. C. Dietrich Stauffer passed away on August 6, 2019 after a long battle with cancer. He was for many years the Managing Editor of *International Journal of Modern Physics C*. The scientific community of statistical and computational physics has lost one of its prominent figures, who has shaped the field for over almost five decades.

1. Biographic Notes

Dietrich Stauffer (DS) was born on February 6, 1943 in Bonn. His father, Ethelbert Stauffer, was a Protestant theologian and numismatist who was since the 1930s Professor of New Testament Studies and Director of Ancient History Studies at the universities of Bonn and Erlangen.

After finishing school in Erlangen (Bavaria), DS studied physics in Munich. In his diploma thesis, he studied excitations of vortex structures in type-II superconductors and rotating H-II which led to a number of well-received publications. He finished his PhD in theoretical physics at the Technical University Munich under the supervision
of Wilhelm Brenig and Hartwig Schmidt working on phase transitions and critical phenomena, specially generalizations of Landau theory.

Later, he turned his attention to the then popular droplet model of M. E. Fisher starting a long-lasting cooperation with Kurt Binder. In 1972, they studied droplet properties in a lattice gas model using Monte Carlo simulations. Next, DS went as a postdoc to the US where he developed the 2-scale-factor universality, a crucial concept for critical points, in collaboration with Michael Wortis. Then he collaborated with C.S. Kiang establishing scaling laws for homogeneous nucleation in the critical regime.

Nucleation theory was a topic that DS frequently returned to in his scientific career and to which he made several important contributions. After returning from the US to Germany, he joined the group of Kurt Binder who in the meantime had become Professor to theoretical physics in Saarbrücken where DS finished his German “Habilitation” in 1975. During this time, he wrote several seminal papers on the theory of percolation and its application to diluted ferromagnets. He also realized the fundamental relation between percolation and the sol-gel transition, independently of P. G. de Gennes. New research areas around this time were computer simulations of spin glass models.

In 1977, he was appointed to the University of Cologne as Associate Professor at the Institute of Theoretical Physics, where he remained until his retirement in 2008. From 1987 to 1990, he was the first head of the many-particle physics group at the then newly established supercomputing center of the research center Jülich (near Cologne).

2. Scientific Outreach

During his 30 years at Cologne University, DS developed a frenzy research and publishing activity. He ventured into many new fields like cellular automata, surface growth, fracture, fractals, critical dynamics, immune systems, opinion models, financial markets, language competition, biological evolution, complex networks, anomalous diffusion, amphiphilic membranes, self-organized criticality, traffic, lattice gases, porous media and others. One of his passions was establishing world records for the speed of computer simulations and for that purpose he invented numerous programming tricks in multi-spin coding and data management. When one of the authors (AS) met him for the first time as 1st year physics student in 1983, he introduced himself proudly with the list of his world records in simulating various Ising models. The biggest crime was in his opinion an idle computer.

DS’s scientific oeuvre comprises over 600 publications, many of them cited frequently. His plume was fast and he was able to write two papers entirely in one single afternoon. He also made several books, especially the standard monograph on percolation theory, the first edition of which he wrote alone as an updated version of his popular review article in Physics Reports. Unfortunately, many of the jokes of this first edition were removed in the second edition with Amnon Aharony.
DS had many international collaborations which led to several guest professorships, e.g. in France (Marseille and ESPCI Paris), Canada (Antigonish), Poland (Wrocław) and Brazil (Niterói), see Fig. 1. His work was honored by several prizes e.g. the Humboldt prize for German-French collaborations and a German-Canadian Research prize. In 1999, DS received the Gentner–Kastler Prize, jointly awarded by the German and French Physical Societies. In 2000, he became the corresponding member of the Brazilian Academy of Science. In 2006, he was awarded an honorary doctoral degree by the University Liège (Belgium) for his seminal work in econo- and sociophysics.

3. A Gifted Teacher

Students and colleagues alike profited from DS enthusiasm for all aspects of physics, both research and education. Only wearing T-shirts, he was always unpretentious and approachable, which partly explains his enormous popularity among students.

In teaching, DS introduced innovative concepts, like a short course (2 semesters) in theoretical physics specifically for future teachers and students from other areas of science. This was documented in a short textbook which was first published in German and later translated to English and revised in collaboration with Gene Stanley. In exercise classes, he was able to motivate students using short and original problems (“quickies”) to think about the essential aspects of the lectures.

One of his main concerns was to guide students to scientific work as early as possible. He established the concept of “mini research” where he worked on some research subjects with pupils from nearby schools or students from early semesters during their vacations. This commonly lead to publications, for which he typically refused to be the coauthor although he did most of the work, in order to encourage the students to become scientists. One of those students is the first author of the present obituary.
DS was a pioneer in establishing Computational Physics as a viable method of physics. He was head of a graduate school in computational methods, collaborating with colleagues from mathematics, computer science and chemistry.

4. Editorial Activities

DS was the Managing Editor of International Journal of Modern Physics C from 1997 till 2008. He had a huge impact on the evolution of the journal. Due to the large amount of energy and time that he invested, the journal blossomed and went from 4 to 10 yearly issues. He actively acquired many papers from colleagues and opened up the journal to new interdisciplinary areas, like sociophysics and complex systems. With fervor, he fought to reduce publication times and in order to accelerate the process, he mostly did the refereeing himself. As referee, he was quite mild and very constructive, helping young scientists and those that had difficulties writing in English.


5. Some Anecdotes

It seems impossible to write about DS without including some examples of his legendary dry sense of humor. In fact, he was a fountain of jokes, so that here we can only give a taste.

DS was invited to write a book for Springer and so he asked one of the authors (PMCO) and his wife to join. After the text was finished and sent for evaluation by Springer’s editorial staff, the editor accepted the publication but added a list of jokes that he recommended to remove from the text. DS refused to follow the recommendation, and declared to his coauthors to be very disappointed. PMCO asked why, and he answered that he was jealous because the majority of jokes cited by the editor had been written by another author, not him. Keeping all jokes the book was published by another editor. In fact, originally, the title of the book was “Sex, Money, War and Computers”, which to DS’s amusement was called “Sex, Drugs and Rock’n’Roll” by one of the authors (AS).

DS worked on biological aging using a computer model inspired by himself. With some colleagues, he was preparing the sexual version of this model, dividing the population into males and females. As usual, he wrote his program in FORTRAN and his colleagues in C, in order to detect programing errors comparing the results, which indeed turned out to be different. After one colleague verified the FORTRAN program written by DS he declared: “Stauffer, your males become pregnant and generate babies!” An outraged DS answered “If Arnold Schwarzenegger can, why
not me?” One conclusion obtained with the model of biological aging was that humans start to age just when they become able to reproduce, thus DS declared to be immortal, since he did not have any (known) offspring. When later presenting this work in public, he used to start announcing that he was able to make one million times sex in one second (on the computer).

DS loved movies and jazz. One of the few possibilities to convince him to stop working was to invite him to go to a cinema to watch a classical movie, typically an old black and white one from Hitchcock. He loved also watching female beach volleyball in TV. Concerning food, he hated everything coming from the sea, but loved fat-rich food. Once, in Paris, a collaborator gave him an apple and he complained “there is no fat!”. Concerning computer programs, he claimed that every program with more than 100 lines of code had necessarily at least one error and thus advised that a good program should never have more lines than the age of the person who wrote it.

DS was in many respects unconventional, both in science and life, which is well reflected in the title of a Festschrift by his long-time friend and collaborator Debashish Chowdhury on the occasion of his 60th birthday.\(^8\)

After retiring in 2008, DS studied history as a guest student at the University of Cologne. In addition, he was still active in physics research, addressing timely problems. He was very worried about wealth inequality and one of his last publications\(^9\) was inspired by the controversial book of the French economist Thomas Piketty.\(^10\)

DS will be missed by colleagues and friends all over the planet and in the scientific community at large.

References