

Prof. Deepak Dhar honoured with Boltzmann Medal

Many Indians have made great achievements in numerous domains of knowledge and science in recent times. Recently, Deepak Dhar has been selected for the prestigious Boltzmann Medal for the year 2022. He is a distinguished visiting professor and a senior scientist at the National Academy of Sciences, India (NASI). His general field of interest is statistical physics, and he has researched on fractals, self-organized criticality, percolation and animal problems and slow relaxation in magnets and glasses. Two physicists have been selected for this honour for the year 2022. In addition to Dhar, John Hopfield of Princeton University has also been selected. The award is instituted to honour scientists who have made great achievements in the field of statistical physics. The recipient is expected to have not previously been awarded the Nobel Prize. The Boltzmann Award was introduced by the Commission on Statistical Physics (C3) of the International Union of Pure and Applied Physics (IUPAP), in honour of eminent theoretical physicist Ludwig Boltzmann who was denied the Nobel Prize due to a bias favouring experimental research. The award which consists of a medal with the inscription of Ludwig Boltzmann is presented at the STATPHYS meeting. The Boltzmann Medal is awarded every three years, and this year's prize will be presented during the 28th International Conference on Statistical Physics (STATPHYS28), which will be held in Tokyo from 7 to 11 August 2023.

Since 1975, the Boltzmann Medal has been presented. The 17th prize was announced this year. Some physicists who have received the Boltzmann Medal have gone on to win Nobel Prizes. From 1975 through 2019, a total of 25 physicists have received this medal.

Dhar has been awarded the Boltzmann Medal for his seminal contributions to sta-

tistical physics, including solutions for self-organized criticality models, interfacial growth, universal long-time relaxation in disordered magnetic systems, exact solutions to percolation and cluster counting problems, and the definition of fractal spectral dimension.

Dhar was born on 30 October 1951 in Pratapgarh, Uttar Pradesh. A graduate from University of Allahabad, he completed his post graduation from IIT Kanpur, and Ph.D. from the California Institute of Technology in 1978. He returned to India after getting his Ph.D. to pursue a career as a research fellow at the Tata Institute of Fundamental Research (TIFR), Mumbai. After two years of research, he was appointed as a full-time fellow in 1980, a post he kept until 1986, when he was promoted to a Reader. He researched a broad area of statistical physics in order to fully understand the behaviour of self-organized critical systems, explain the dynamics at phase interfaces, and define their spectral amplitude. Prior to his retirement from regular service, he served at the TIFR in various roles, including Associate Professor and Professor. Dhar spent a year as a visiting scientist at the University of Paris during 1984–85, and he also served as the Rothschild Professor at the Isaac Newton Institute, UK for a month in May 2006.

He continues his association with the TIFR as a visiting professor after retirement and has been working at IISER since 2016. Dhar is an Elected Fellow of all the three leading science academies of India: the Indian Academy of Sciences, the Indian National Science Academy, and the National Academy of Sciences, India. In addition, he is a member of the World Academy of Science.

Dhar's current research focuses on phase transitions with only hard core interactions. For a long time, researchers have been interested in the phase transition in a

system of hard spheres as a function of density from a gas-like to a solid-like crystalline phase. He studied lattice models of long straight rods of fixed length k (called kmers), which exhibit two phase transitions: from isotropic to nematic to a high density disordered phase. Fourteen students have completed their Ph.D.s under his guidance.

Dhar is an associate editor of *Journal of Statistical Physics*, a Springer publication since 2005. He was in the editorial board of the journal during 1993–96 and 1999–2002. He was also an editorial board member of the *Indian Journal of Pure and Applied Physics (IJPAP)* of the CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR), a former editorial adviser to *Physica A*, and has been associated with journals such as *Journal of Statistical Mechanics: Theory and Experiment*, *Physical Review E* and *Pramana* as an editorial board member. He was a member of the Commission on Statistical Physics of the International Union of Pure and Applied Physics from 1992 to 1995 and also a member of the programme committee of the International Centre for Theoretical Sciences.

Dhar was awarded the prestigious Shanti Swarup Bhatnagar Prize for Science and Technology by the Council of Scientific and Industrial Research (CSIR) in 1991 for his contributions to physics. By receiving the coveted prize, he brings pride to Indian science and encourages theoretical research in the country.

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