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DISTINGUISHED LECTURE SERIES

Professor Eitan Tadmor
University of Maryland, USA

16 Dec 2019 (Monday), 2.00–3.00pm
Auditorium, Institute for Mathematical Sciences

Emergent Behavior in Collective Dynamics

A fascinating aspect of collective dynamics is the self-organization of small-scales and their emergence as higher-order patterns -- clusters, flocks, tissues, parties.

The emergence of different patterns can be described in terms of few fundamental "rules of interactions". I will discuss recent results of the large-time, large-crowd dynamics, driven by anticipation that tend to align the crowd, while other pairwise interactions keep the crowd together and prevent over-crowding.

In particular, I address the question how short-range interactions lead to the emergence of long-range patterns, comparing geometric vs. topological interactions.

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Eitan Tadmor is a Distinguished University Professor at the University of Maryland, College Park with a joint appointment at the Department of Mathematics, the Institute for Physical Sciences and Technology and the Center for Scientific Computation and Mathematical Modeling (CSCAMM). He served as the Director of CSCAMM 2002–2016, and of the NSF Research network "Kinetic Description of Emerging Challenges in Natural Sciences" (Ki-Net), 2012-2020.

Professor Tadmor received his Ph.D. in Mathematics from Tel Aviv University, and has held positions at Tel-Aviv University and at University of California, Los Angeles (UCLA). He was the founding co-director of the NSF Institute for Pure and Applied Math (IPAM) at UCLA. He serves on the editorial boards of international journals (Acta Numerica, SIAM Journal on Mathematical Analysis and Journal of Foundations of Computational Mathematics) has given lectures in the 2002 International Congress of Mathematicians (ICM) and 2019 ICIAM. Professor Tadmor was awarded the SIAM-ETH Peter Henrici Prize in 2015, and is a Fellow of the American Mathematical Society. He has published more than one hundred and eighty research papers, mostly in Numerical Analysis and Applied Partial Differential Equations.

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