University of Zurich[UZH]

Faculty of Science

JUNE
06
2016

Irchel Campus
Y16 G15
4:00 pm

SCHRÖDINGER

COLLOQUIUM

SERIES

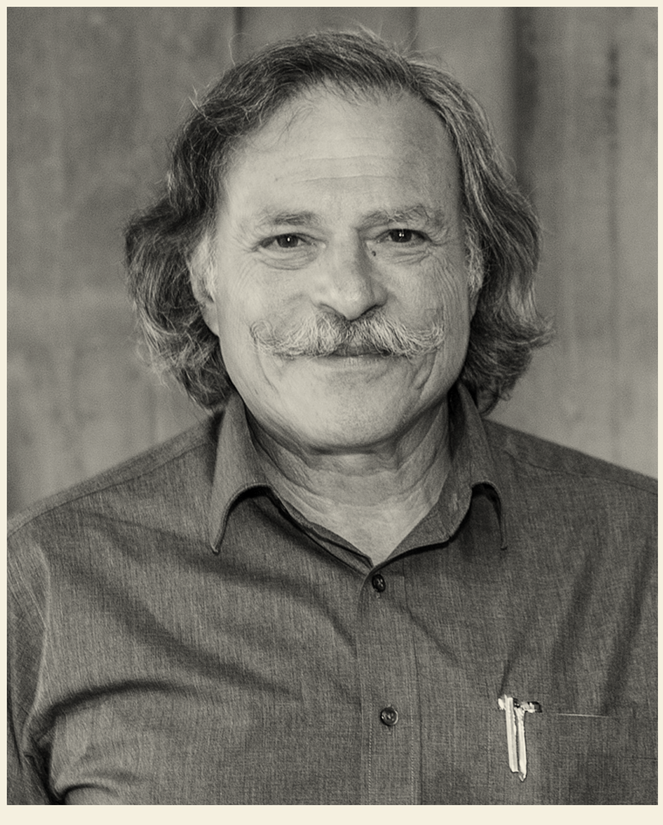
www.physik.uzh.ch/schroedinger

Gestaltung: Sarah Steinbacher, Informatikdienste, SIVIC

PROF. PAUL CHAIKIN New York University

Random Organization, Hyperuniformity and Photonic Bandgaps

A periodically sheared non-Brownian suspension undergoes collisions which allow the particles to explore new configurations. Below a critical strain the system arranges itself until collisions no longer occur and an absorbing state is reached, similar to the resting slope in a sand-pile. At criticality such absorbing state systems produce hyperuniform particle correlations, where number fluctuations grow less rapidly with window size than do random systems. On “kicking” the system, the configuration tends toward the uniformity of a crystal but with no periodicity or long range order. In fact, hyperuniformity rather than periodicity of materials is suggested to be responsible for spectral gaps in wave transport. We have constructed such systems on a cm and micron scale and find large isotropic photonic bandgaps. Further we have shown that such photonic materials can be modified to allow arbitrary waveguides, switching and resonant cavities.



A new series of special physics colloquia in honor of Erwin Schrödinger, who was a professor at UZH from 1921 – 1927.
Lectures are intended for a broad audience from the Faculty of Science, aiming at experts and non-experts.