Stanford

Stephen Shenker

Richard Herschel Weiland Professor

Physics

CONTACT INFORMATION

- **Administrative Contact**

  Zhenhua Wang

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Bio

BIO

Professor Shenker's contributions to Physics include:

- Basic results on the phase structure of gauge theories (with Eduardo Fradkin)

- Basic results on two dimensional conformal field theory and its relation to string theory (with Daniel Friedan, Emil Martinec, Zongan Qiu, and others)

- The nonperturbative formulation of matrix models of low-dimensional string theory, the first nonperturbative definitions of string theory (with Michael R. Douglas)

- The discovery of distinctively stringy nonperturbative effects in string theory, later understood to be caused by D-branes. These effects play a major role in string dynamics

- The discovery of Matrix Theory, the first nonperturbative definition of String/M theory in a physical number of dimensions. Matrix Theory (see Matrix string theory) is an example of a gauge/gravity duality and is now understood to be a special case of the AdS/CFT correspondence (with Tom Banks, Willy Fischler and Leonard Susskind)

- Basic results on the connection between quantum gravity and quantum chaos (with Douglas Stanford, Juan Maldacena and others)

ACADEMIC APPOINTMENTS

- Professor, Physics

ADMINISTRATIVE APPOINTMENTS

- Asst--Full Professor, University of Chicago, (1981-1989)
- Professor, Rutgers University, (1989-1998)
- Professor, Stanford University, (1998- present)
- Director, Stanford Institute for Theoretical Physics, (1998-2009)

HONORS AND AWARDS

- Member, National Academy of Sciences (2015)
- Lars Onsager Prize, American Physical Society (2010)

- Dean's Award for Distinguished Achievements in Teaching, Stanford University (2007)
- Fellow, American Academy of Arts and Sciences (2006)
- Fellow, American Physical Society (2003)
- Undergraduate Teaching Award, Rutgers Society of Physics Students (1992)
- Fellow, MacArthur Foundation (1987)
- Presidential Young Investigator Award, NSF (1985)
- Fellow, Sloan Foundation (1983)

PROFESSIONAL EDUCATION

- Ph.D., Cornell University (1980)
- B.A., Harvard University (1975)

LINKS

- Publications on INSPIRE: http://inspirehep.net/search?ln=en&ln=en&p=find+a+stephen+shenker
- Publications on arXiv: http://arxiv.org/find/all/1/au:+shenker_stephen/0/1/0/all/0/1

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Professor Shenker’s research focuses on quantum gravity, in particular string theory and M theory, with an emphasis on nonperturbative aspects.

Teaching

COURSES

2023-24

- Statistical Mechanics: PHYSICS 212 (Aut)

2022-23

- Graduate Quantum Mechanics I: PHYSICS 230 (Win)

2021-22

- Graduate Quantum Mechanics I: PHYSICS 230 (Win)

2020-21

- Advanced Theoretical Physics I: Random Matrices in Physics: PHYSICS 450 (Aut)
- Graduate Quantum Mechanics II: PHYSICS 231 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Dan Stefan Eniceicu, Shuo Xin, Cynthia Yan, Sungyeon Yang

Postdoctoral Faculty Sponsor

RIFATH KHAN, Henry Lin, Shreya Vardhan

Doctoral Dissertation Co-Advisor (AC)

Alexander Frenkel, Shunyu Yao

Doctoral (Program)

Sam Cree, Alexander Frenkel, Bryen Irving, Kyung-Su Kim, Akshat Pandey, Nicholas Rapidis, Samuel Wong, Michelle Xu, Kangning Yang, Kevin Zhou

Postdoctoral Research Mentor

Shreya Vardhan