



# Frontiers of Mathematics Lecture

## Conceptualizing dynamical complexity

### Abstract

Dynamical Systems studies time evolutions of processes natural and engineered. Defined by maps or differential equations, these processes can be simple, with trajectories converging to stable equilibria or limit cycles. The picture can also be more complicated, as noted by Poincaré in his study of celestial mechanics over a century ago. Many examples with seemingly unpredictable dynamics have since come to light, and a rigorous theory of dynamical complexity was developed over time. In this talk, I would like to review highlights of this theory. I will discuss -- in broad strokes -- geometric and probabilistic approaches to conceptualize and quantify dynamical complexity, with emphasis on observable phenomena. I will touch upon also broader contexts such as stochastic systems and semiflows generated by evolutionary PDEs.

### Biography

Lai-Sang Young is a Professor of Mathematics and Henry and Lucy Moses Professor of Science at the Courant Institute, New York University. She received her PhD from the University of California at Berkeley in 1978. Her primary area of research is dynamical systems. She also has research interests in computational neuroscience. She has given plenary lectures at the International Congress of Mathematicians (2018), International Congress on Mathematical Physics (1997, 2018), and in annual meetings of the American Mathematical Society and Society for Industrial and Applied Mathematics. Her recent awards include the Moser Prize (2021), Hopf Prize (2023), and Schock Prize (2024). She is a member of the US National Academy of Sciences.



### Professor Lai-Sang YOUNG

*New York University, USA*

Date :  
March 17, 2026 (Tuesday)

Time :  
5:00 – 6:00 pm

Venue :  
Lecture Theatre A, 1/F,  
Chow Yei Ching Building,  
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