

Linear Dynamics, or There and Back Again

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You are invited to join me on a journey through the fascinating and beautiful terrain of linear dynamics. In this introductory talk, I will explore the fundamental topics in the area.

The central concept in linear dynamics is known as *hypercyclicity*. There exist many natural examples of continuous linear operators that turn out to be hypercyclic. I will begin this presentation with a gentle introduction to hypercyclicity, where I will recall its principal properties and explore its intrinsic connections to topological dynamics.

I will then survey various flavours of wild linear dynamical behaviour, including weak mixing and frequent hypercyclicity. These strengthenings of hypercyclicity have generated much research interest and led to deep and sophisticated results. In particular, the study of frequent hypercyclicity has revealed inherent links to ergodic theory.

To finish, I will present an overview of some research directions that have been the subject of recent investigations in linear dynamics.

This talk is intended to be accessible to non-specialists with a background in analysis.