

IMPRS UFAST Focus Course The Infinite Dimensions of Quantum Physics Michael Ruggenthaler

Abstract:

It is common practice to equate quantum physics with the manipulation of matrices and quantum states with their eigenvectors. However, the basic tenets of quantum physics make the use of infinite-dimensional vector spaces and unbounded operators necessary, which diverge in their properties significantly from matrices. While many of these differences can become important when developing new theoretical methods, they are commonly not covered in the standard courses on quantum physics.

In this focus course we will discuss the most important of these differences and their consequences in the context of quantum mechanics and non-relativistic quantum electrodynamics.



NO VACANCY BUT WE CAN MOVE SOME PEOPLE AROUND

<https://www.ias.edu/ideas/2016/pires-hilbert-hotel>

TOPICS:

- Finite- vs infinite-dimensional vector spaces (why do we need infinite dimensions)
- Bounded vs unbounded operators (why do we need unbounded operators)
- Solutions of time-dependent Schroedinger equations (when are more general solutions necessary)
- Existence of ground states and stability.

Tuesday 2nd – Friday 5th May 2023

09:30 h – 12:30 h, SR O2.068

Register on Geventis I-UF FC6