

SEMINAR | The set of quantum correlations: Bell inequalities, Self-testing and Convex geometry

VICTOR BARIZIEN

December 03, 2024

12:00 to 13:00

Seminar Room

One of the most puzzling fact about quantum theory is that it predicts nonlocal behaviors of nature. This naturally leads to ask whether this property is just an artifact of the theory, or if such observations could actually be made. Answering such question led John S. Bell to develop a framework allowing for the study of arbitrary theories solely based on the statistics they predict. As such, quantum based predictions were utilized to build experiments disqualifying any local theory of nature. Conversely, studying the statistics obtainable in such experiments, as well as the set formed by all quantum statistics, has been shown to capture some of quantum theory's core properties. However, only partial descriptions of this set have been provided until now. In this presentation, we will delve into the world of this quantum set, studying its geometry through the lens of self-testing, a method that allows to infer the underlying physics of a quantum experiment when specific statistics are achieved.

Hosted by: Prof. Dr. Antonio Acin