Contribution ID: **336** Type: **Talk**

# Real-time dynamics from convex geometry

*Friday, 2 August 2024 12:35 (20 minutes)*

A quantum mechanical system comes naturally equipped with a convex space: each (Hermitian) operator has a (real) expectation value, and the expectation value of the square any Hermitian operator must be non-negative. This space is of exponential (e.g. in volume) dimension, but low-dimensional projections can be efficiently explored by standard algorithms. Such approaches have been used to precisely constrain critical exponents of conformal field theories ("conformal bootstrap") and, more recently, to constrain the ground state physics of various quantum mechanical systems, including lattice field theories. In this talk we discuss related approaches to systematically constraining the real-time dynamics of quantum systems, which are otherwise obstructed from study by sign problems and the ill-posed nature of analytic continuation.

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**Session Classification:** Algorithms and artificial intelligence

**Track Classification:** Algorithms and Artificial Intelligence