# HIGH ENERGY PHYSICS COLLOQUIA

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## A NEW CLASS OF ENTROPY-POWER-BASED UNCERTAINTY RELATIONS

### Abstract

In my talk I will use the concept of entropy power to derive a new one-parameter class of information-theoretic uncertainty relations for pairs of observables in an infinite-dimensional Hilbert space. This class constitute an infinite tower of higher-order cumulant uncertainty relations, which allows in principle to reconstruct the underlying distribution in a process that is analogous to quantum state tomography. I will illustrate the power of the new class by studying Schrödinger cat states and the Cauchy-type heavy-tailed wave function. Finally, I try to cast some fresh light on the black hole information paradox.