Physics AT QUEENS COLLEGE

Colloquium Notice

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From Huygens to Entanglement: Bridging Optics, Mechanics, and Quantum Physics Across 350 Years

Christiaan Huygens made foundational contributions to both wave optics and classical mechanics—two fields that appear remarkably different. In this talk, I will present our recent discovery of an unexpected quantitative connection between them, linking optical polarization, coherence, and entanglement to mechanical concepts such as the center of mass and moment of inertia. Interestingly, distributions of classical point masses can provide a mechanical representation of entanglement in classically nonseparable optical fields. I will further show how this correspondence extends to quantum two-qubit states, establishing a conceptual bridge from classical mechanics to classical optical and quantum entanglement. These results reveal a surprising unity among mechanics, optics, and quantum physics, and offer an intuitive perspective on the nature of entanglement. Our original optics–mechanics connection was recognized by *Physics World* as one of its ten most popular physics stories of 2023.

Monday
November 9, 2026
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326
This talk is accessible via **Zoom** or use
meeting ID 829 2687 2594 and **passcode 866995** to join