

# IQSE AMO QO Seminar Series

Tuesday, May 9th, 11:30 am ZOOM & IQSE  
seminar room (MPHY 578)

Pizza will be served for IQSE members at 11:00 am. The talk will start around 11:30 am

## Dr. Barnabas Kim

(Texas A&M University)

### Comparison between descriptions on quantum systems: 'Quantum Jump' vs 'Stochastic' equation

**EVENT DETAILS:** After the advent of quantum mechanics, the investigations have been concentrated on the quantitative accurate descriptions of quantum phenomena, and reached to quantum field theory which c

an describe the dynamics for almost everything upto subatomic particles. Although there are many successful theoretical experimental achievements on the quantum systems, the question on the physical meaning of 'quantum reality' has been intriguing but contains ambiguities. The struggle to overcome the difficulties in quantum measurement leads to the alternative interesting descriptions on quantum mechanics, such as quantum jump with Monte Carlo approach. Another way is to construct a "stochastic" Schrödinger equation with non-Hermitian Hamiltonian to describe the dynamics. As a simple example, the spontaneous decay in a two-level system, comparisons between these descriptions will be discussed to show the pros and cons of each description, which might provide clearer descriptions to quantum systems. [1] M. Scully and S. Zubairy, "Quantum Optics" (Cambridge, 1997). [2] M. Tokman, M. Erukhimova, Q. Chen, and A. Belyanin, "Universal model of strong coupling at the nonlinear resonance in open cavity-QED systems", PRA 105, 053707 (2022).

#### **ZOOM information:**

<https://tamu.zoom.us/j/98156251523?pwd=QVdSdGxtL1UyY0g1L083SU5QR0QrUT09>

Meeting ID: 981 5625 1523

Passcode: 297578

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