

# The Mysterious case of qubit readout in circuit QED

**일시** 2월 19일(월) 15:00 - 16:00

**장소** 연세대학교 과학관 B101호

## Speaker



**Alexandre Blais**  
Professor of Physics,  
Scientific Director,  
Institut quantique,  
Université de Sherbrooke

## Abstract

Circuit quantum electrodynamics (cQED) has emerged as a powerful platform for quantum computation and for the investigation of quantum optics at microwave frequencies. A key step in all cQED experiments is qubit readout. Based on microwave drives, it is expected that by increasing the drive amplitude, we can get faster and better qubit measurements. However, experiments show that as the drive amplitude is increased, the quality of the readout drops quickly, something that severely limits qubit readout in the laboratory. In this talk, we present an explanation for this phenomenon which has puzzled the field for over 15 years. We begin by reviewing circuit QED and the qubit measurement process in this system. We then present numerical results of the measurement dynamics. Our findings reveal signatures of ‘qubit ionization’ where the qubit is promoted to highly excited states by the readout drive. We further explore the connections between these observations and the emerge of chaos in superconducting qubits, and compare our results to recent experiments.