



# SFB 767

## Sonderseminar

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### Optimization of real-world qubit measurements

The last decade has witnessed the rapid development of a variety of quantum bit (qubit) implementations for use in emerging quantum information technologies ranging from fault-tolerant quantum computation to quantum metrology. In these applications, it is often necessary or desirable to read out the state of the qubits with the highest accuracy and in the shortest amount of time. Achieving these goals generally requires 1) an understanding of the physics of the measurement noise and 2) an optimal inference procedure tailored to that noise. In this talk, I will discuss various aspects of the optimization of qubit readout, including single-shot readout [1], adaptive decisions [2], and soft-decision decoding [3]. I will illustrate these aspects with the help of several experimentally relevant examples.

[1] B. D'Anjou & W.A. Coish, "Optimal post-processing for a generic single-shot qubit readout", Phys. Rev. A 89 012313 (2014)

[2] B. D'Anjou, L. Kuret, L. Childress & W.A. Coish, "Maximal adaptive-decision speedups in quantum-state readout", Phys. Rev. X 6 011017 (2016)

[3] B. D'Anjou & W.A. Coish, "Soft decoding of a qubit readout apparatus", Phys. Rev. Lett 113 230402 (2014)



**Montag, 23. Januar 2017 um 10:30 Uhr in P 912**

Ansprechpartner: G. Burkard, 5256

**new time and new room!**