



Old Dominion University

Department of Physics

Colloquium

Thursday, February 15, 2018

"Origin and Reduction of $1/f$ Magnetic Flux Noise in Superconducting Quantum Circuits"

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Abstract: Low frequency $1/f$ magnetic flux noise is a dominant contributor to dephasing in superconducting quantum circuits. Recent work indicates that the noise is from a high density of unpaired magnetic defect states on the surfaces of the superconducting thin films. I will demonstrate that adsorbed molecular O_2 is the dominant contributor to magnetism in superconducting thin films. I will show that this magnetism can be reduced by appropriate surface treatment or improvement in the sample vacuum environment. Effects of surface treatments on qubit dephasing will be discussed. These advances open the door to the realization of superconducting qubits with improved dephasing times.

Presentation: **OCNPS 200 @ 12:30 pm**
Refreshments: **OCNPS Atrium @ 12:15 pm**

All interested persons are cordially invited to attend.