

**Notice and Invitation**

Oral Defense of Master's Thesis  
The Volgenau School of Engineering, George Mason University

**Matthew Ryan Carter**  
Bachelor of Science, University of Virginia

**Enabling a Control System Approach to Side-Channel and Fault Attacks**

Wednesday, December 5, 2018, 3:00pm  
Engineering Building, Room 3507  
All are invited to attend.

**Committee**

Dr. Jens-Peter Kaps, Thesis Director  
Dr. Kris Gaj  
Dr. Craig Lorie

**Abstract**

As the number of embedded devices continues to grow, attacks that require physical access to the device become more plausible. Two sub-classifications of these attacks, Side-Channel Attacks (SCA) and Fault attacks, necessitate the attacker to be familiar with the target implementation. Side-Channel Attacks exploit information leaked by the target device to discover secret cryptographic keys. Fault attacks act upon the system to induce error in device operation that may result in information leakage or improper execution. The error produced by the attack is dependent on the method used to inject the fault. This paper discusses some of the advances in SCAs and Fault Attacks and proposes a control system approach to these classes of attacks. The result of the research is a System on a Chip (SOC) for measuring power consumption, analyzing results, and refining measurement as a feedback loop.