

# UNH Materials Science Seminar

11:10-12:00, Thursday, March 22, 2007  
Murkland Hall 202, University of New Hampshire

## Electrostatic Discharge Protection for Microelectronic Circuits

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Electro-Static Discharge (ESD) is a short duration ( $<1\text{ms}$ ), large voltage, high value DC current due to naturally occurring charge build-up. We all harmlessly experience ESD when we touch a door knob on a dry day after a walk across a carpet. ESD is not so easily dismissed in the world of integrated circuits. Unless protection is designed into an IC, even the smallest ESD event will destroy it. This talk will describe the sources of ESD, and three ESD models used in the electronics industry. The effects of ESD will be illustrated with actual SEM photos from part failures. After that the most popular ESD protection schemes and their relative merits will be discussed. Finally, the future challenges and direction of ESD protection will be addressed.

Steven Leibiger is a Member, Technical Staff in the Process Technology Development Group of Fairchild Semiconductor Corporation in South Portland, Maine. He has worked in circuit modeling, design automation, and semiconductor process development for 22 years. His current focus is ESD protection for both low voltage and high voltage process technologies. He holds BSEE and MSEE degrees from M.I.T., has published more than 10 technical papers and holds 8 US patents. He is a member of the IEEE and is the current chair of the Maine IEEE Electron Devices Society.