NITheP cordially invites you to a seminar by:

**Prof. Jens Koch**
*Department of Physics & Astronomy, Northwestern University*

**Date:** Friday, 20\textsuperscript{th} July 2012  
**Time:** 11h30 – 12h30  
**Venue:** NITheP Seminar Room, H-Block, 3\textsuperscript{rd}Floor

**Title:** From few to many degrees of freedom:  
Quantum coherence in superconducting circuits

**Abstract:**  
Quantum coherence in superconducting circuits has seen remarkable improvements over the last ten years. Despite an increase in coherence times of nearly 5 orders of magnitude, a different property has remained largely stagnant: following the "simpler is better" mantra, circuits across all borders between phase, flux, and charge qubits, consistently employ less than a handful of circuit elements. A recent experiment with a new circuit composed of over 40 elements, dubbed "fluxonium," could be the kick-off for a paradigm change and make the world of superconducting circuits a lot bigger. I will give a quick introduction to the how-to of quantizing circuits, and then discuss the basic physics of the fluxonium circuit. I will end with an outlook on our most recent work on developing theory for quantum circuits with many degrees of freedom.

Tea/coffee & biscuits will be served at 11h00