Invitasjon

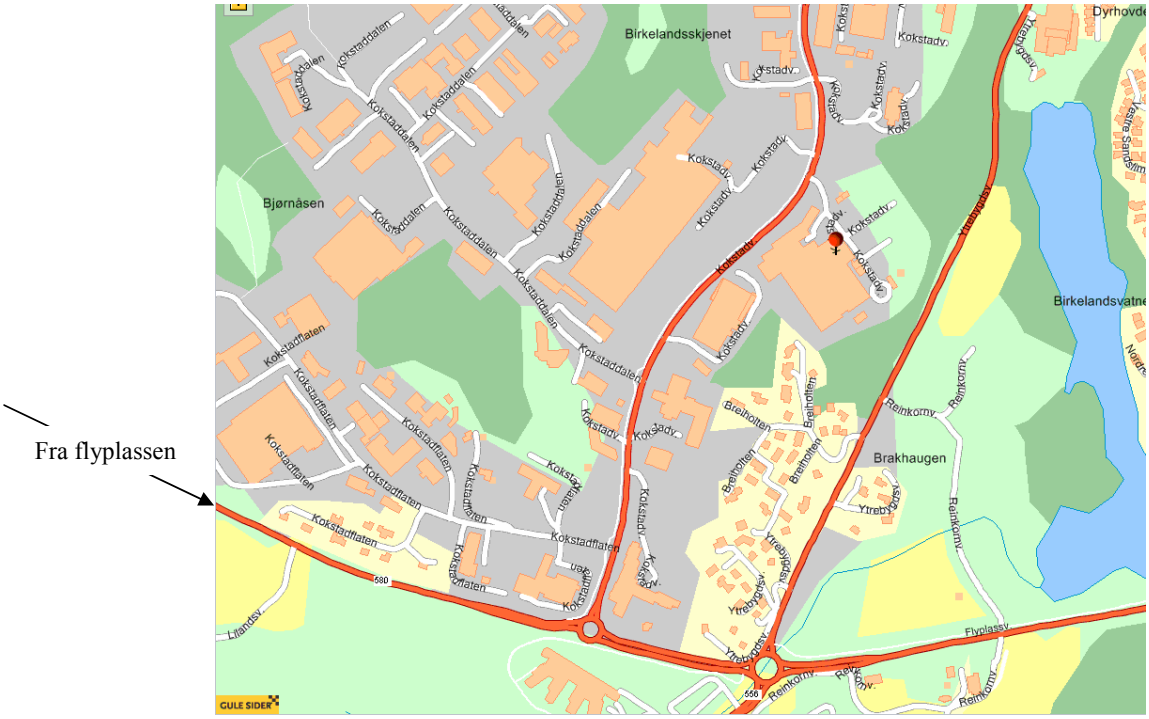
Norsk MTT/AP avdeling har gleden av å invitere deg til å delta på et heldags-seminar den 7. sept hos Nera Networks i Bergen. Prof. Almudena Suarez vil presentere følgende foredrag:

Almudena Suarez
Communications Engineering Dept., University of Cantabria, Spain
7 sept 2007

09:45 – 10:15	Coffee and Introductions
10:15 - 11:45	Global stability analysis and stabilization of power amplifiers
11:45 - 12:00	questions / discussion
12:00 - 13:00	lunch
13:00 - 14:15	Analysis and design techniques for autonomous microwave circuits
14:15 - 14:45	coffee break / discussion
14:45 - 16:00	Phase noise analysis of free-running and synchronized oscillators

Power amplifiers often exhibit instabilities giving rise to frequency division by two or oscillations at incommensurate frequencies. These phenomena, observed from a certain level of input power, cannot be detected through a small-signal stability analysis of the circuit. Instead, a large-signal stability analysis must be performed. Other behaviors, like hysteresis and chaotic solutions, can also be obtained when the input power is varied. The qualitative changes in the output-power spectrum are due to bifurcations or qualitative stability changes in the circuit solution or in the number of solutions when the parameter is varied. The talk introduces the local and global stability concepts and the analysis techniques, based on harmonic balance. The first objective is to allow a good comprehension of the different phenomena. The second objective is to provide practical simulation tools for an efficient prediction and elimination of the undesired behavior. Different approaches for the local-stability analysis of nonlinear regimes will be presented, with emphasis on the pole-zero identification. Then, techniques will be shown for the detection of the most common types of bifurcations in power amplifiers. The final goal will be the stabilization of the circuit and the design corrections in order to suppress the undesired phenomena will also be presented.

For illustration, the simulation tools will be applied to two different switching amplifiers developed at California Institute of Technology. These amplifiers have remarkably high efficiency, but in intermediate input-power range they exhibited different undesired phenomena. The first amplifier is a Class-E/F amplifier, which showed oscillations, hysteresis and chaos. The second amplifier is a Class-E amplifier, which showed jumps in the power-transfer curve and sideband noise amplification. After the application of the different techniques, the two amplifiers were globally stabilized for all the expected operating values of the amplifier bias voltage and input power. This was achieved with negligible degradation of the amplifier performance, in terms of output power and drain efficiency. The stable behaviour obtained in simulation was experimentally confirmed.



Møtested: Nera Networks, Kokstadvn 23, 5020 Bergen
Ta Flyplassveien fra flyplassen til Kokstad (ca. 2km). Ta Kokstadveien til Nera Networks.

Vi ber dere om å melde dere på innen 1. sept ved å sende mail til Eric Wheatley ew@ieee.org

Vennlig hilsen
2007 styret.

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