



Máster en Ingeniería de Sistemas y Servicios Accesibles para la Sociedad de la Información

EUIT Telecomunicación

Curso 2010-2011

Seminar

Design of RLC-Band pass filters



Professor

Prof. Dr. Ing. Thomas Buch (University of Rostock, Germany)

Studies of information technology and theoretical electrical engineering at the TH Ilmenau. Doctorate in the field of the RF communication channel modeling. 10 years development leader at the development of integrated navigation systems and autopilots. Processing of projects in the field of the integrated navigation and track control systems, development of autonomous unmanned watercrafts. Execution of examinations and acquirement of studies for the flow measuring with the help of Acoustic Doppler Current Profiler (ADCP) into harbor entrances and river mouths. Present job as teacher at the University of Rostock on the area of the signal and system theory, the analogous and digital filters as well as this one digital signal processing. Present field of research activity is signal processing in the underwater acoustics and the modelling of the signal propagation in the water.

Dates:

27th September – 29th September 2010

Room: 3004

Contents:

Lecture 1, (Monday 27th at 14:30h)

Introduction, Filter design, Standard approximations

- Introduction
- System functions
- Filter synthesis
- Normalization, TP-design specifications of attenuation
- Standard approximation Butterworth and Tschhebyscheff Filter
- RLC-ladder networks circuits, removing the normalizations

Lecture 2, (Tuesday 28th at 14:30h)

Description of compact narrow-band-pass filters

- N-circle coupled filter
- Resonant circuits, measures of coupling, alternate circuit
- Description of ladder networks circuits, chain fraction expansion
- Impedances, transfer functions

Lecture 3, (Wednesday 28th at 15:30h)

Circuit design

- Filter design, pole zero map
- Loss transformation
- Design of reactance four-pole networks
- Inductive and capacitive coupling
- Removing the normalizations
- Example
- Summary