

Electronics

EE3C11

(Introduction)



Rene van Swaaij



Chris Verhoeven



Anton Montagne



Marion de Vlieger

Building the "bridge"

Semiconductors

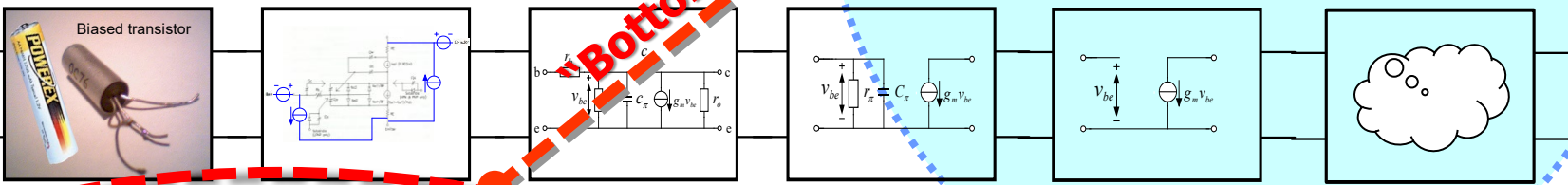
Customer

Specifications come from the top
Hardware comes from the bottom
Show-stoppers come from the bottom

Top-down design

Design Methodology

Circuits



Bottom-up design

Bottom-aware top-down design

Schedule

Semiconductors

Top-down design

Circuits

Bottom-up design

1	Monday, February 13	8:45	Physics 1 + small intro	Boole
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Books

Electronics

Structured Electronic Design

Edition 1.3

Anton Montagne

Download via Companion Website

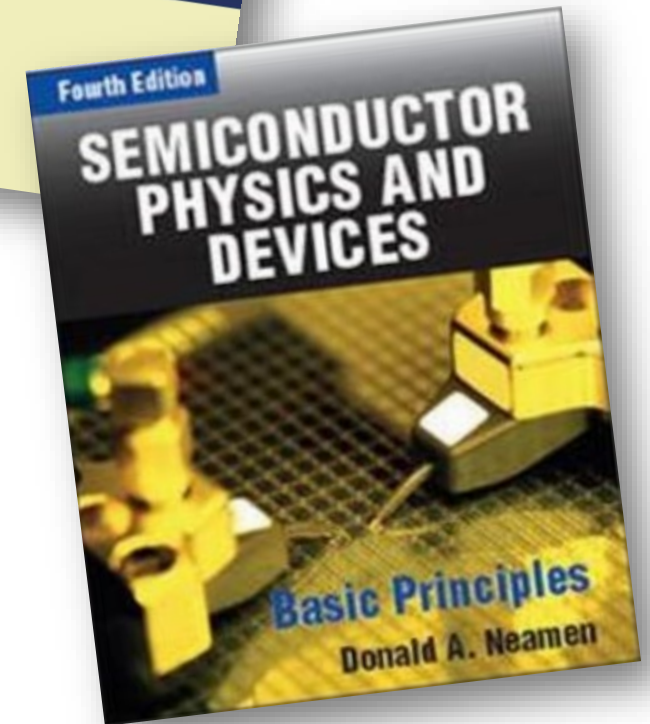
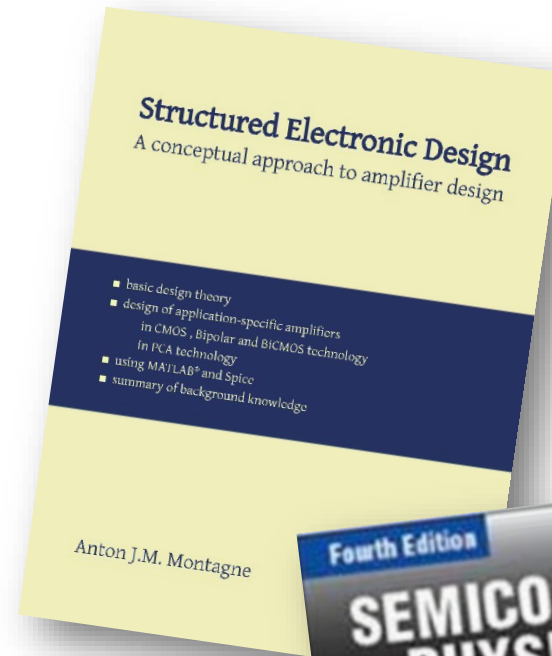
<https://analog-electronics.tudelft.nl/>

Semiconductors

Semiconductor Physics and Devices; Basic Principles

Donald A. Neamen

McGraw-Hill International Edition, (4th edition)



Software

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Search

MY HISTORY | PRODUCTS | APPLICATIONS | **DESIGN CENTER** | COMMUNITY | EDUCATION | SUPPORT

Design Center > Circuit Design Tools & Calculators > LTspice

LTspice

LTspice® is a high performance SPICE simulation software, schematic capture and waveform viewer with enhancements and models for easing the simulation of analog circuits. Included in the download of LTspice are macromodels for a majority of Analog Devices switching regulators, amplifiers, as well as a library of devices for general circuit simulation.

Benefits of using LTspice

Our enhancements to SPICE have made simulating switching regulators extremely fast compared to normal SPICE simulators, allowing the user to view waveforms for most switching regulators in just a few minutes. This video provides an overview of the advantages of using LTspice in an analog circuit design and how easy it is to get started.

Download LTspice

LTspice®: Simulation, Schematic capture and Waveform viewer

SLiCAP

Symbolic Linear Circuit Analysis

quick jumps:

1. Open-source version of SLiCAP: [SLiCAP_python](#)
2. Discontinued in 2021: [SLiCAP for MATLAB](#)

What it is and why you should use it

- SLiCAP is an acronym for: **S**ymbolic **L**inear **C**ircuit **A**nalysis **P**rogram.
- SLiCAP is a more than a symbolic network simulation tool: 'Symbolic SPICE'.
- SLiCAP helps you setting up and solving design equations of electronic circuits.
- SLiCAP is **free of use** licensed under a 'Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License'.

Benefits

- Speeds up the circuit engineering process
- Makes complex symbolic analysis doable
- Compatible with Jupyter notebooks
- Integrates documentation and design with many easy to use built-in functions for HTML reports with plots, tables, expressions, etc.
- Supports design education and knowledge building

Features

- Accepts SPICE netlists as input
- Concurrent design and documentation
- Supports and facilitates Structured Electronic Design

SLiCAP : To set up and solve Design Equations of electronic circuits.

To create design documentation

(SLiCAP is a Python application: you need a laptop with e.g. Anaconda)

Exam

Multiple choice + some open questions that need short answers

Open book (course books, handouts, and slides)

1 bonus point for the exam obtained via a practical design.

(Remains valid for the re-sit)

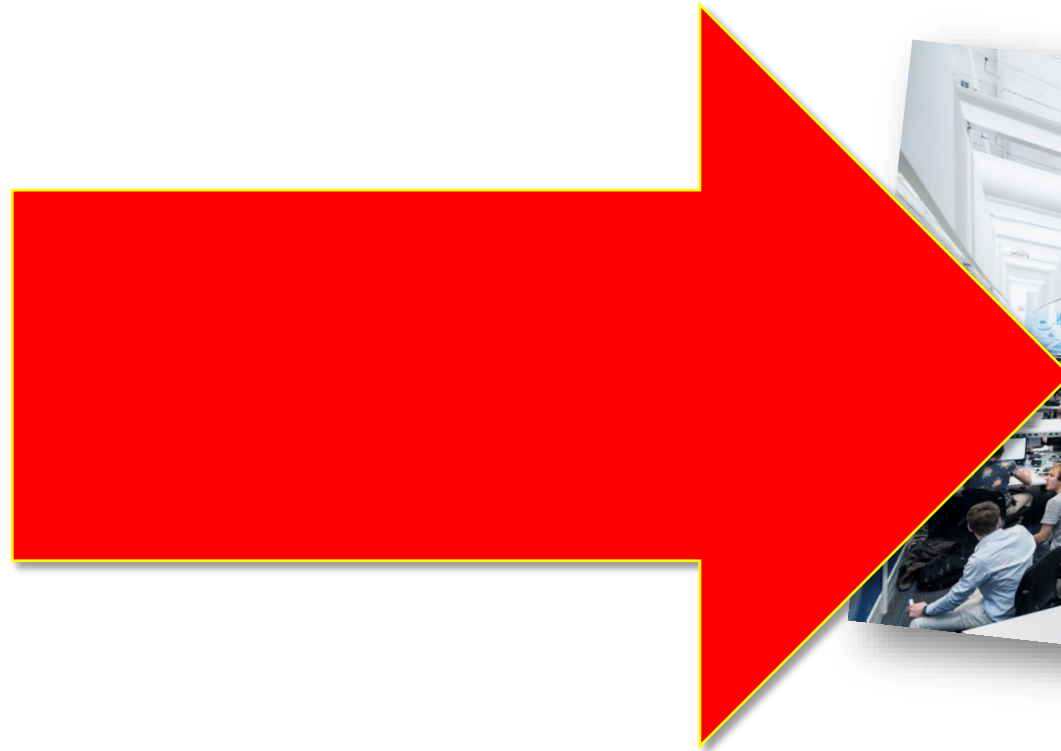
Semiconductors

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Top-down design

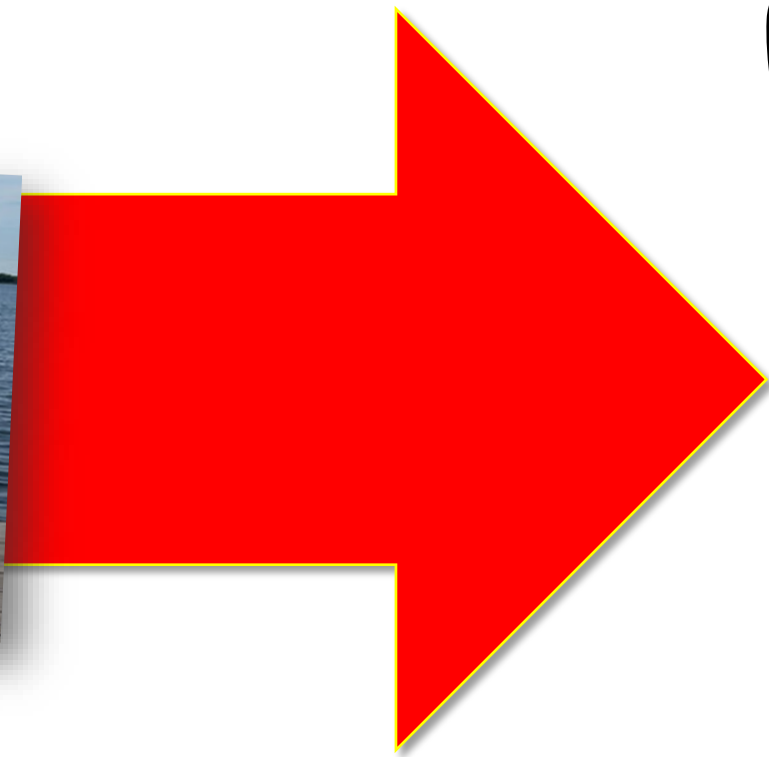
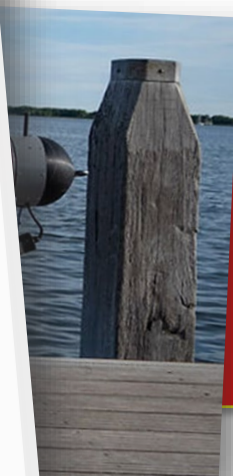
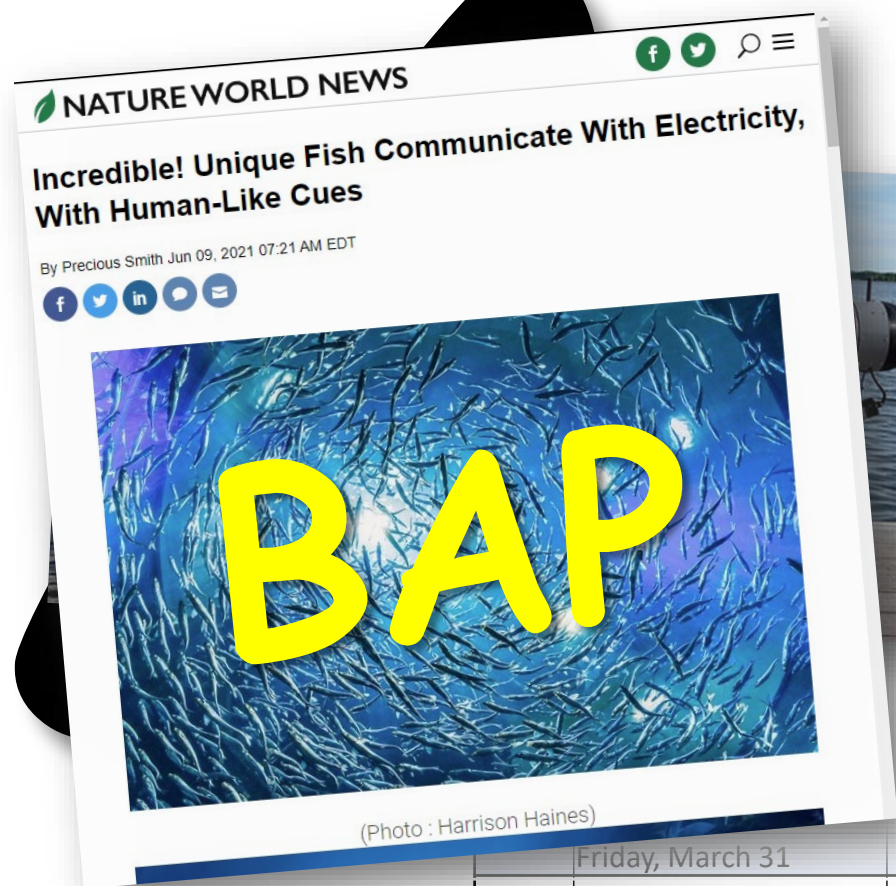
Circuits

A



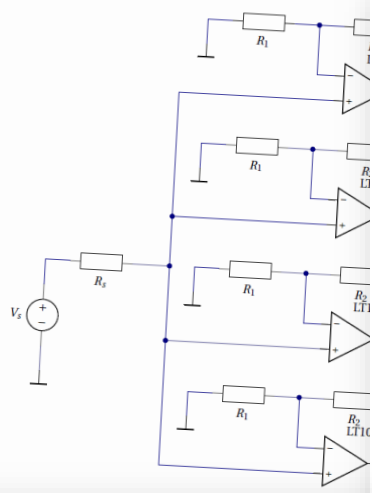
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Example

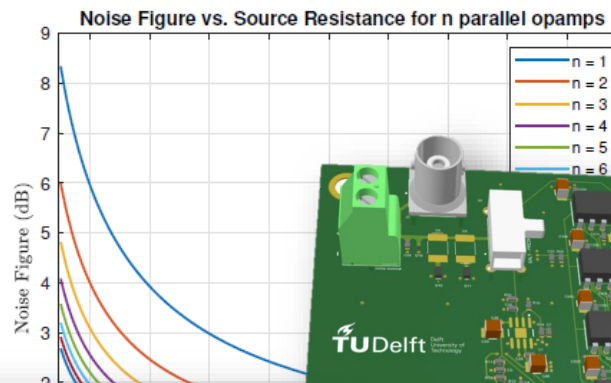


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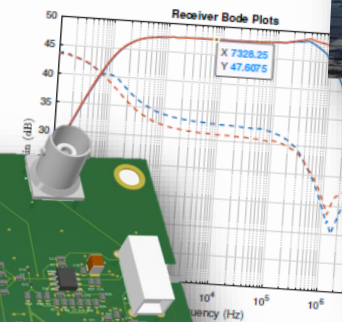
4.2. SEAWATER AMPLIFIER



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6.3. TESTING THE TRANSMITTER

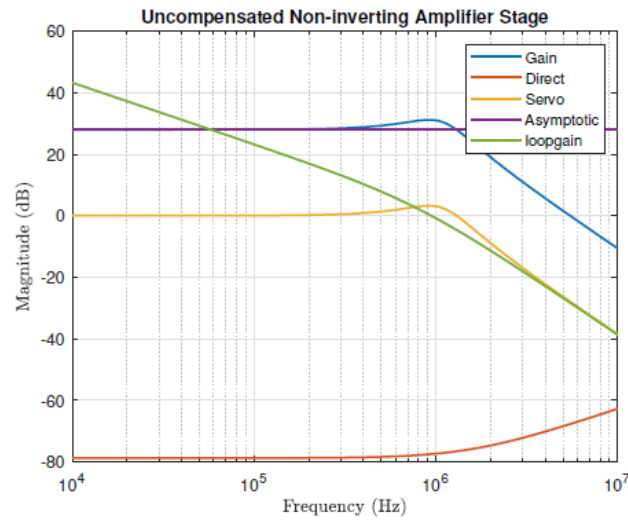


Subsea Communication System using Electric Fields Hardware Design

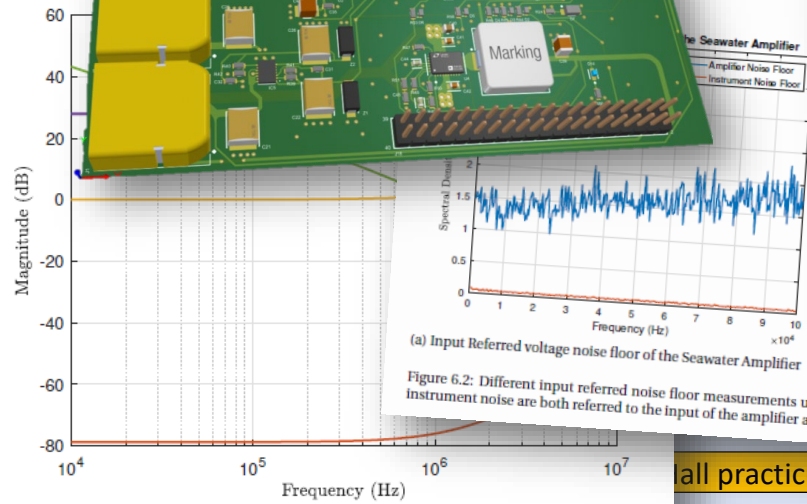


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By Precious Smith Jun 09, 202



(a) Uncompensated Non-inverting Amplifier

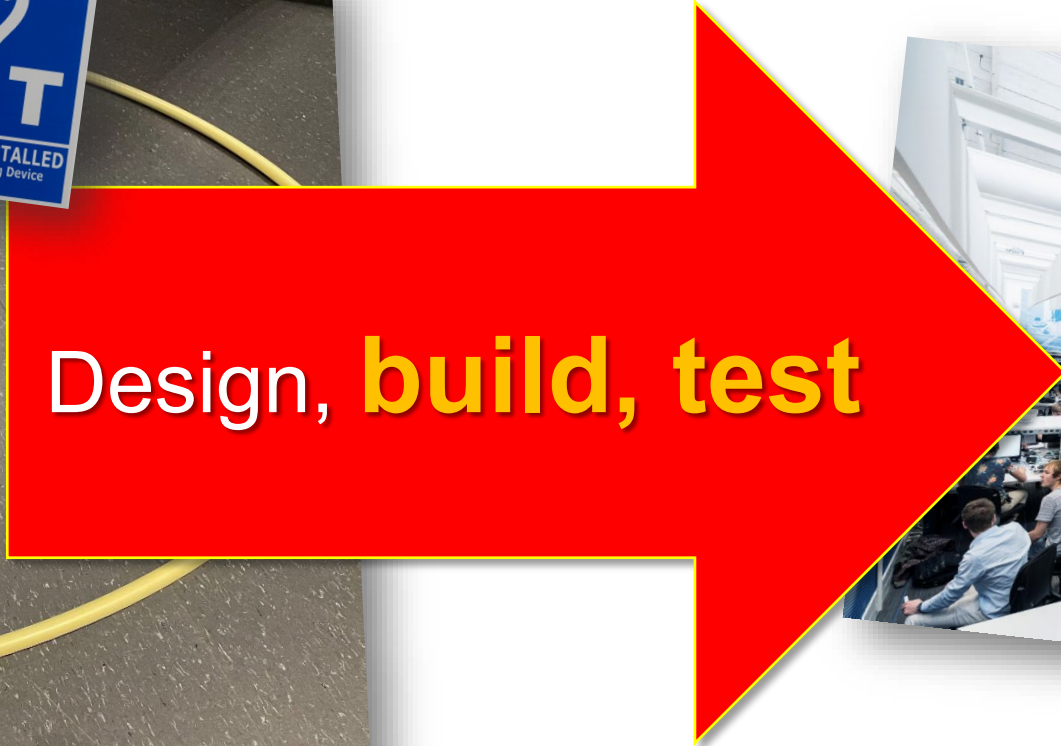


(b) Compensated Non-inverting Amplifier

Figure 6.2: Different input referred noise floor measurements using the amplifier and instrument noise are both referred to the input of the amplifier and are

all practicum

all practicumzaal 1



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Semiconductors

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Circuits