This Ardem Associates website features works by Dr. R. David Middlebrook, Professor Emeritus of Electrical Engineering, California Institute of Technology

Home Page

Response Form

DESIGN-ORIENTED ANALYSIS RULES AND TOOLS

These downloadable files are the slides from the latest version of "Middlebrook's New Structured Analog Design Course."

The material in these files, although copyrighted, may be freely quoted, copied, or reproduced (but not sold).

If so used, a reference to the source would be appreciated:

Design-Oriented Analysis Rules and Tools, http://www.RDMiddlebrook.com

Dr. Middlebrook's original course "Structured Analog Design" has been available for several years as the "Technical Therapy" DVD ROM with Owner's Manual (the "Old course"). His New Structured Analog Design Course (the "New course") has been developed to near its final asymptotic form in 20 presentations over the last 2½ years.

The New course incorporates most of the Old course, plus his recent work on the General Feedback Theorem, reconstructed to expose the Extra Element Theorem (EET), the Chain Theorem (CT), and the General Feedback Theorem (GFT) as special cases of the Dissection Theorem.

Here are some details about the topic structure of the New course.

The first 8 chapters, and Chapter 10, are essentially the same as the Old course, except that Chapter 6 is an expansion of finding sums and differences of factored p-z expressions, a valuable step in combining the results of several stages.

Chapter 9 begins the new material, introducing the Dissection Theorem and its special case the Chain Theorem (CT)

Chapters 11 through 13 continue the new material.

Chapters 14 - 18 are applications of all the previous D-OA methods.

Chapter 14 shows how you get the "wrong" results when you don't choose the "right" injection configuration.

Chapter 15 shows how nonidealities ignored in the conventional single-loop model

can be incorporated in an extra term in the formula, which predicts a drastically different step response from a high-frequency IC feedback amplifier example.

Chapter 16 is a real design-oriented example of how to get the proper response for a Darlington configuration, and features the CT. This is slightly different from the GFT CD, where the same example was treated by the GFT.

Chapter 17 is the classic switching regulator input filter problem, illustrating the use of the EET.

Chapter 18 shows how a current-programmed feedback loop in a switching regulator can be represented by a closed-loop equivalent circuit.

Throughout, the Intusoft ICAP/4 GFT Template is used to implement the Dissection Theorem and all three special cases: CT, EET. and GFT.

Downloadable Files of D-OA Rules & Tools:

Ch 01.Motivation & Background.pdf

Ch 01A.FETs & BJTs are CCDs.pdf

Ch 02.Low Entropy Expressions.pdf

Ch 03.Normal & Inverted Poles & Zeros.pdf

Ch 04.Improved Formula for Quadratic Roots.pdf

Ch 05.Approximations & Assumptions.pdf

Ch 06.Products & Sums of Factored P-Z Expressions.pdf

Ch 07.The IO IT.pdf

Ch 08.NDI & EET.pdf

Ch 09.DT & CT.pdf

Ch 10.Basic Feedback.pdf

Ch 11.NDI & GFT.pdf

Ch 12.DNTI & 2EET.pdf

Ch 13.DNTI & 2GFT.pdf

Ch 14.2CE Feedback Amp.pdf

Ch 15.Realistic IC Feedback Amp.pdf

Ch 16.Darlington Follower Instability.pdf

Ch 17.Input Filter Problem.pdf

Ch.18.CurrProgSwReg.pdf

Glossary.pdf

NDI,Nullor,GFT Template.pdf

Message from Dr. Middlebrook
Middlebrook's Course is Back!
Technical Therapy Data DVD ROM
- Who can benefit from the Technical Therapy Course?
- How to convince your boss…
- What is Design-Oriented Analysis (D-OA)?
- Participant Testimonials
- Owner's Manual Contents Page
- Technical Therapy?? What It's All About

The GFT: A Final Solution Data CD ROM
- What is the GFT?
- Where did the GFT come from?

Real World Design Data CD ROM

Top
Home

Who is Dr. Middlebrook?
- Biography
- Publications

Free Downloads
- Design-Oriented Analysis Rules and Tools
- The GFT Owner's Manual
- The GFT: A Final Solution for Feedback Systems

Related Topics
- Links

Response Form

Ardem Associates, 28286 Stillwater Drive, Menifee, CA 92584
Tel: (951) 679-7543 / Email: info@ardem.com

04/07/2010 33170