About the final report
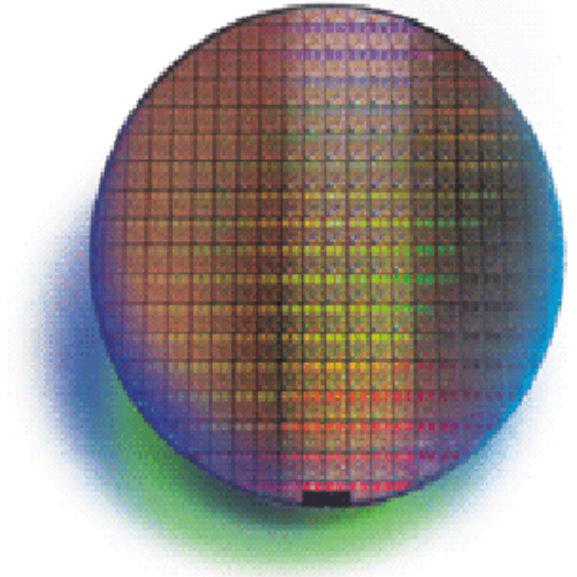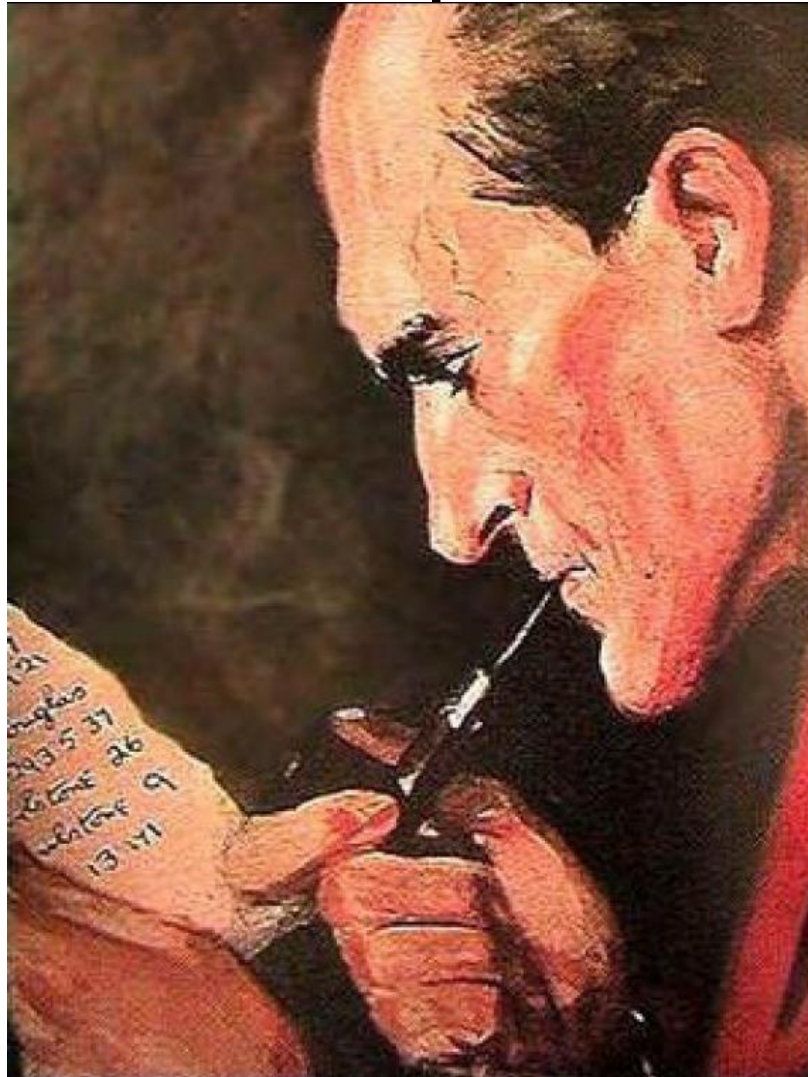## Tuesday, May 3rd, 2011, 9:15

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Remember: Grading is based on the contents of the report

Prosjektrapport

INF4420 - Prosjekter i analog/mixed-signal CMOS konstruksjon

Henrik Hagen og Mats Risopatron Knutsen

11.05.2009

Sammendrag

Prosjektet omhandler reduksjon av offset spenning til en OTA. Dette løses ved å benytte en digital kalibreringssløyfe som inneholder et suksessiv approksimasjonsregister (SAR), og en DAC. Offset korreksjonen foretas av en trimmekrets som trekker en strøm fra transistorene i inngangssteget til OTAen. Ytelsen til OTAen påvirkes minimalt av denne trimmekretsen. Trimmekretsen styres av DACen. Det har blitt laget et forslag til utlegg av M3M DAC og trimmekrets. Uten noen form for kalibrering har OTAen et standardavvik til offset spenningen på 7.1 mV. Med kalibreringssløyfen oppnår vi en reduksjon av standardavviket til 0.323 mV med ideell DAC, til 0.638 mV med M3M DAC og til 0.581 mV med ekstrahert layout av M3M DAC og trimmekrets. Med kalibreringssløyfen og egen layout av har standardavviket til offset spenningen til OTAen blitt redusert med nesten 92 %.

IMRaD structure

Innhold

Some pointers

- http://www.idi.ntnu.no/~lasse/DM/SkriveTips.php

- **Preface**
- **(Acknowledgement)**
- **1 Introduction**
- **2 Theoretical background**
- **(2.1 Various approaches to Nifty Gadgets)**
- **2.2 Nifty Gadgets my way**
- **3 My implementation of a Nifty Gadget**
- **4 Nifty Gadget results
  5 Discussion**
- **6 References**

Nifty Gadget / DAC chapter 3

- **3 My implementation of a Nifty Gadget**

- Can you describe your implementation in detail?
  Why did you use this technology?
  How does the theory relate to your implementation?
  What are your underlying assumptions?
  What did you neglect and what simplifications have you made?
  What tools and methods did you use?
  Why use these tools and methods?

Nifty Gadget / DAC chapter 4

- **4 Nifty Gadget results**

- Did you actually build it?
  How can you test it?
  How did you test it?
  Why did you test it this way?
  Are the results satisfactory?
  Why should you (not) test it more?
  What compensations had to be made to interpret the results?
  Why did you succeed/fail?

Nifty Gadget / DAC chapter 5

- **5 Discussion**

- Are your results satisfactory?
  Can they be improved?
  Is there a need for improvement?
  Are other approaches worth trying out?
  Will some restriction be lifted?
  Will you save the world with your Nifty Gadget?

Guide to writing a thesis

Guide to Writing a Thesis

Department of Applied Electronics
Last updated 1997-05-12

Original manuscript written by Sven Mattisson

The Design and Implementation of a Nifty Gadget

Tekla-Liz Book

April 32, 1992

Abstract
What is all this about?
Why should I read this thesis?
Is it any good?
What's new?

Preface

Have you done anything that doesn't have to do with your research?
Have you published parts of this work before?

Acknowledgement

Who is your advisor?
Did anyone help you?
Who funded this work?
What's the name of your favorite pet?

1 Introduction

What is the use of a Nifty Gadget?
What is the problem?
How can it be solved?
What are the previous approaches?
What is your approach?
Why do it this way?
What are your results?
Why is this better?
Is this a new approach?
Why haven't anyone done it before?
or
Why do you reiterate previous work?
What is your contribution to the field of Nifty Gadgets?

2 Theoretical background

What is the required background knowledge?
Where can I find it?

2.1 Various approaches to Nifty Gadgets

What is the relevant prior work?
Where can I find it?
Why should it be done differently?
Has anyone attempted your approach previously?
Where is that work reported?

2.2 Nifty Gadgets my way

What is the outline of your way?
Have you published it before?

3 My implementation of a Nifty Gadget

Can you describe your implementation in detail?
Why did you use this technology?
How does the theory relate to your implementation?
What are your underlying assumptions?
What did you neglect and what simplifications have you made?
What tools and methods did you use?
Why use these tools and methods?

4 Nifty Gadget results

Did you actually build it?
How can you test it?
How did you test it?
Why did you test it this way?
Are the results satisfactory?
Why should you (not) test it more?
What compensations had to be made to interpret the results?
Why did you succeed/fail?

5 Discussion

Are your results satisfactory?
Can they be improved?
Is there a need for improvement?
Are other approaches worth trying out?
Will some restriction be lifted?
Will you save the world with your Nifty Gadget?

6 References

What is the background reading list?

Guide to writing a thesis

Where is the related work?
Where is the prior work?
Where can I find important material?

Appendix A

Can you outline fatilary calculus or whatever complicated theory or results you are using that will obscure the text?

Appendix B

A thesis should discuss the following topics:

- **Introduction**

  Presentation of the problem or phenomenon to be addressed, the situation where the problem or phenomenon occurs, and references to earlier relevant research.

  Common errors
  Problem is not properly specified or formulated; insufficient references to earlier work.

- **Purpose**

  What can be gained by more knowledge about the problem or phenomenon.

  Common errors
  The purpose is not mentioned, not connected to earlier research, or not in line with what the actual contents of the thesis.

- **Problem/Hypothesis**

  Questions that need to be answered to reach the goal and/or hypothesis formulated be means of underlying theories.

  Common errors
  Missing problem description; deficiencies in the connections between questions; badly formulated hypothesis.

- **Method**

  Choice of an adequate method with respect to the purpose and problem/hypothesis.

  Common errors
  An inappropriate method is used, for example due to lack of knowledge about different methods; erroneous use of chosen method.

- **Result**

  Answers to the forwarded questions by means of the achieved results.

  Common errors
  The results are not properly connected to the problem; blurry presentation; the results are inter-

mixed with discussion.

- **Discussion**

  Discussion of the accuracy and relevance of the results; comparison with other researchers results.

  Common errors
  Too far reaching conclusions; guesswork not supported by the data; introduction of a new problem and a discussion around this.

- **Conclusion**

  Consequences of the achieved results, for example for new research, theory and applications.

  Common errors
  The conclusions are too far reaching with respect to the achieved results; the conclusions do not correspond with the purpose.

Home Page for the Department of Applied Electronics