

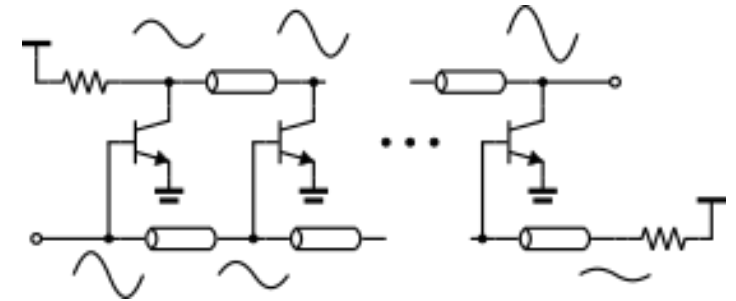
Analysis and Design of a Distributed Transimpedance Amplifier

Electro-optical interface (E/O) is one of the major bottlenecks, if not the most critical, in the roadmap to monolithically integrated optical transceivers in single chip. Therefore, wideband E/O building blocks that relax the system's SNR requirement are constantly desired. The distributed solution is the best candidate for achieving significantly higher bandwidth compared to narrow-band single-transistor implementations. Unlike modulator drivers, where distributed structures are widely adopted, there are relatively few publications on the transimpedance amplifier counterpart (TIA). One obvious reason is the high noise metrics associated with this implementation.

In this thesis, a distributed transimpedance amplifier is analyzed and designed. Minimizing the noise figure or input-referred noise current while maintaining the broadband nature of the distributed circuit is the primary objective.

Tasks

- Investigate the feasibility of uniform and nonuniform distributed TIAs
- Optimize the gain cell to minimize noise performance
- Design and simulate the circuits in a 0.13- μm BiCMOS technology



Prerequisites

- Understanding of circuits (e.g. ES, RFE, RFICS)
- Experience with ADS or Cadence is a big plus

Contact Person

M.Sc. Quang Binh Pham

Gebäude 30.10 (IHE), Zimmer 3.29

E-Mail: binh.pham@kit.edu

Telefon: 0721-608 46252

Prof. Dr.-Ing. Ahmet Cagri Ulusoy

Gebäude 30.10 (IHE), Zimmer 3.31

E-Mail: cagri.ulusoy@kit.edu