

Master's thesis proposal

Investigation of a 35-nm metamorphic HEMT distributed frequency multiplier MMIC

Fraunhofer IAF is one of the world's leading research institutions in the field of III-V semiconductors and synthetic diamond developing technologies for use in communication, energy, mobility, industry and medicine. In our microelectronics department we are offering the following master's thesis:

Scientific goals:

- Investigation and demonstration of the feasibility of a distributed frequency multiplier for implementation in a future broadband mm-wave signal source.
- The MMIC should achieve a wideband frequency multiplication with sufficient output power to drive the next component within its chain (e.g. next frequency multiplier or up-/down-converter mixer).
- The targeted frequency and bandwidth will be assessed during the first steps of the work after decision on the MMIC architecture and first simulations.
- The MMIC will be fabricated using one of IAF's mHEMT process. In order to achieve a high level of miniaturization, a design based on thin-film microstrip line (TFMSL) is currently envisioned.

Tasks to complete:

- Review the theory, design and analysis of frequency multipliers and literature research.
- Circuit design simulation and layouts.
- Documentation.

What we offer:

A thesis at Fraunhofer IAF allows you to apply the knowledge you have acquired during your studies to specific research projects. With us, you can work scientifically and gain project experience at the same time. We offer modern laboratory equipment, supervision by experienced scientists and a variety of opportunities for further education.

Send your application to:

Dr. Jutta Kühn
Phone +49 761 5159-842
jutta.kuehn@iaf.fraunhofer.de

Fraunhofer Institute for Applied Solid State Physics IAF
Tullastrasse 72
79108 Freiburg