

# Bachelor- / Masterthesis / Student Job Offer

## » Design of an On-Chip E/W-Band Area Efficient Antenna for Autonomous Driving«

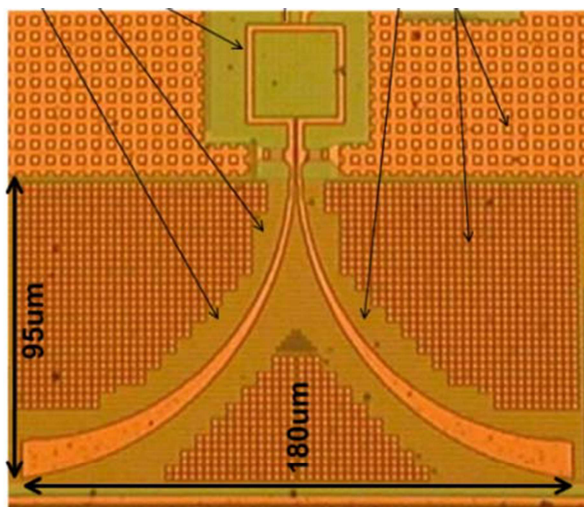
The research group

### Circuit and System Technology

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In automotive applications, the distance between the car and another object is not fixed. A common technique to measure the distance is radar. One component of a radar system is the TX and RX antenna. If this antenna is implemented as off chip antenna, high loss, introduced by the bondwires, lowers the transmit power of the TX and the sensitivity of the RX. Nevertheless, on chip antenna needs a lot of chip space. Within this thesis, an area efficient on chip antenna for E & W band (60 GHz-110 GHz) should be designed.



Chip photograph of a 140 GHz on Chip antenna [1]

### Task Description:

Within this work a 60GHz to 110 GHz area efficient on chip antenna should be designed. The workload includes:

- Literature research
- Comparison of different topology
- Optimization of a specific topology.
- Implantation of an optimization script (only Masterthesis)

### Requirements:

- Outstanding results in theoretical electrical engineering.
- Knowledge on on chip antennas is advisable but not essential.
- Experience in CST or Empire XPU is advisable but not essential.

In case of interest, please send an E-Mail containing your latest transcript of records to Stephan Kruse ([stkruse@hni.upb.de](mailto:stkruse@hni.upb.de))

[1] S. T. Nicolson, A. Tomkins, K. W. Tang, A. Cathelin, D. Belot and S. P. Voinigescu, "A 1.2V, 140GHz receiver with on-die antenna in 65nm CMOS," 2008 IEEE Radio Frequency Integrated Circuits Symposium, 2008, pp. 229-232