

Status report

It has been one year since I received the IEEE MTT-S Graduate Fellowship Award for Medical Applications. With the support of this award, I am very excited to report that the following achievements have been made:

- I. I have published a journal paper on IEEE Transactions on Microwave Theory and Techniques. The paper is entitled “A Single-Chip Electron Paramagnetic Resonance Transceiver in 0.13 μ m SiGe BiCMOS”. The paper is an extended version of the conference paper “A Single-Chip Dual-Mode CW/Pulse Electron Paramagnetic Resonance Spectrometer in 0.13 μ m SiGe BiCMOS” that I included in the original research plan. In this journal paper, the designs of the circuits and system were presented in more detail. Moreover, more measurement results using the assembled EPR spectrometer were presented for various samples.
- II. I have published a paper entitled “A Single-Chip In-Band Full-Duplex Low-IF Transceiver with Self-Interference Cancellation” at IEEE MTT-S Int. Microwave Symposium (IMS), May 2016 and it was selected as a finalist for the best student paper award. This paper realized the ideas of active self-interference cancellation included in the original research plan. It represented the first paper that demonstrated the operation of the receiver and the self-interference cancellation circuit when a co-integrated transmitter was active at the same time and generating more than 20dBm output power. Utilizing this chip, the assembled EPR spectrometer achieved more than 20dB improvement in sensitivity compared to our prior work.
- III. I have defended my Ph.D. and the thesis title is “Miniaturized Electron Paramagnetic Resonance (EPR) Spectrometer Based on a Fully-Integrated Full-Duplex Transceiver in Silicon”. The core part of the thesis is the fully-integrated transceiver chip included in the original plan and the one published at IMS this year. After graduation, I have joined Oracle Corporation at Santa Clara, CA, working on high-speed analog circuit design.

Finally, I would like to thank the committee again for presenting this prestigious award to me. This award represents a great acknowledgement to me and I am very glad to see many exciting results coming out of it.