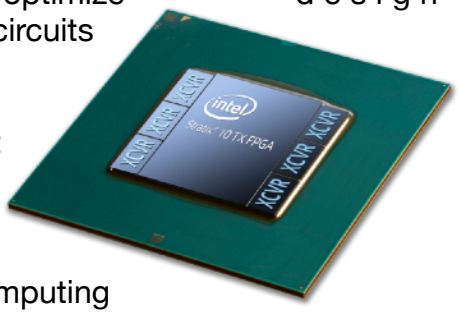
High-Speed Analog to Digital Converter Circuit

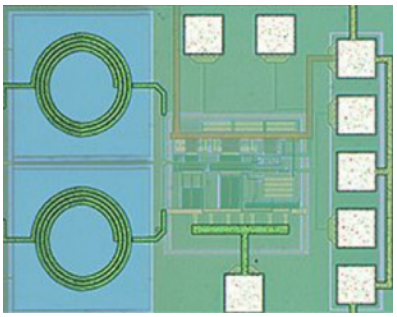
Number of students: 2 to 4
Estimated period of project: 12 months (Senior Project)

Description:
The goal of this project is to develop a methodology to optimize design for very high-speed analog-to-digital converter (ADC) circuits used in RF circuits.



Data converters are key building blocks to impairment communication systems. Modern RF 5G systems are using data converters to convert signal to digital for further signal processing. Also, data converters are used in serial communications in high-performance computing systems.

In this project we are planning to develop a design methodology in order to implement very high-speed analog amplifiers and ADC circuits, estimate their performance and power dissipation, and propose an optimal design. Based on that, a software tool will be developed, which can offer an optimal design depending on technology of IC fabrication, speed of operation, or target application. We will use the tool to make a practical design and implementation the integrated circuit as well.



Students involved in this project, will learn about fundamental of deign of high-speed amplifiers, data converter systems, advanced techniques to design, model and analyze such systems, and learn about analog IC layout techniques. Thus, such a project will certainly be a very valuable experience for students for their future carrier. Interested students can move forward and participate in design of such systems and work on cutting edge projects (12 months).

Background: Students with a good background on circuit design are encourage to apply. Also, students need to be self motivated and active. Having good knowledge on relevant tools (e.g. SPICE, Matlab, Python) is a plus.

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** Some figures are taken from www.intel.com