MEng Design Project Announcement – 2017-18 AY

**Project title:** High Performance Operational Amplifier

**Brief Description of Design Project Goals:**

**Overview:** This project involves the design and layout of a high bandwidth operational amplifier in TSMC 180nm CMOS. Specifications for quantifying performance, layout guidelines used by our research group, and mentorship/oversight will be provided to assist with "real-world" design considerations, but familiarity with Cadence simulation and layout as well as technical knowledge of ECE 453 (or equivalent) are required. At the end of the project, you will provide us with a complete specification sheet which meets industry standards for characterization and reporting gain, bandwidth, stability, rejection ratios, linearity, noise, and other relevant specifications. Depending on the difficulty, a suite of slight variations which trade-off different performance corners may also be included. All devices will be integrated into our standard cell library and will be available for group members to use for top-level simulation and testing of future research projects.

**Specific MEng Contribution:** Operational amplifier design and layout for addition to standard-cell library for Molnar Group TSMC 180nm ICs.

**ECE Field Advisor Name:** Alyosha Molnar
- Email – am699@cornell.edu
- Phone – 255-8257
- Office – 423 Phillips Hall

**Number of MEng Students Needed:** 2 to work in a pair

**Required Skills:**
- Technical background in ECE4530 (or equivalent) – expert/competent
- Cadence Virtuoso Simulations - competent
- Cadence Virtuoso Layout – familiar
- MATLAB Control System Toolbox (for modeling transfer functions) – familiar

**Estimated Project Time Frame:**

2017-18 Academic Year, Two (2) Semesters