

# RYAN WANS

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## EDUCATION

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### Purdue University

B.E. Electrical Engineering (Expected)  
B.S. Mathematics (Expected)  
Vice Chair of IEEE MTT-S Chapter

*2023 - Present*  
GPA In Progress

### South River High School

High School Diploma, STEM Magnet Program (Nanotechnology)  
Linear Algebra, Multivariable Calculus, Mu Alpha Theta, International Science & Engineering Fair,  
Texas Solar Car Challenge, Chairperson of STEM Magnet Program, Varsity Rowing

*2019 - 2023*

Weighted GPA: 4.32

## EXPERIENCE

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### Research Assistant, OpenFASOC Group, University of Michigan

Inductor Test Structure Characterization on SKY130 with NIST, 20GHz VCO Design, C-V/I-V Characterization, Automated Opamp Layout and Simulation Generator, Published Results

*07/2022 - Present*

### Research Apprentice, Kinget Group, Columbia University

Automatic Gain Control (AGC) on SkyWater's open-source 130nm CMOS process

*09/2021 - 04/2022*

## TECHNICAL SKILLS

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<i>CMOS PDK</i>	SKY130, GF180MCU, SG13G2
<i>IC Design</i>	Cadence ICFB/Virtuoso, AWR Microwave Office, ADS, FOSS Toolchain
<i>PCB Design</i>	Altium, Xpedition
<i>Simulation</i>	Spectre, SPICE, Ansys HFSS, CST Studio, AWR Microwave Office, Keysight ADS, Genesys, ASITIC
<i>Languages</i>	Python, C, Java, Golang, Verilog, JavaScript
<i>Scripting</i>	MATLAB, UNIX shell, LaTeX, gdsfactory, Tcl

## RESEARCH PROJECTS

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07/2023 - Present

### **Automated Opamp Generator:** OpenFASOC Group

Advisor(s): Mehdi Saligane, Ali Hammoud

Assisted in the construction of a large Python- and gdsfactory-based automated generator for opamps of any specification. Utilized reinforcement learning for opamp derivation & selection, gdsfactory for layout, and Python for orchestration and SPICE simulation. PDK-Universal. Paper in progress.

09/2022 - 02/2023	<b>SKY130 Inductor Characterization:</b> OpenFASOC Group Advisor(s): Mehdi Saligane Worked with UMich and NIST to autonomously create and characterize inductor test structures on SKY130. Structures included multiple geometries of planar inductors, baluns, and VCOs. Summarized in ISSCC notebook.
09/2021 - 04/2022	<b>Baseband, Inductorless AGC:</b> Kinget Group Advisor(s): Rui Xu, Peter Kinget A 800MHz - 1GHz Automatic Gain Control feedback system fully designed, laid out, and tested using MWO and the FOSS ecosystem on SKY130.
05/2021 - 08/2021	<b>26GHz Automotive FMCW Radar Board:</b> Self Created a 6cm $\times$ 6cm antenna-on-board FMCW Ka-band radar on Rogers 4350B substrate. Realized using CST, MWO, and Altium. Operates at 27.5dBm peak output power with a 80m/s max detection speed

## AWARDS AND HONORS

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2022	<b>Finalist:</b> ISSCC (IEEE's Journal of Solid-State Circuitry) 2023 Student Notebook/Paper Competition.
2022	<b>Awardee:</b> Fort Meade Alliance - STEM Innovation Grant
2021	<b>Semi-Finalist:</b> Intel International Science & Engineering Fair
2021	<b>Finalist:</b> Diamond Challenge - Entreprenurialship Competition

## PUBLICATIONS

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- [1] **Ryan Wans**, "Open Source 2.4GHz LC-VCO in SKY130," in *ISSCC 2023 Student Notebook Competition*, November, 2022.
- [2] **Ryan Wans**, Jack Woods, "Project Aeolus," in *2021 International Science & Engineering Fair*, April, 2021.