

Parthorn Ammawat

📍 Pasadena, CA ✉ pammawat@caltech.edu ☎ +1 (626) 993 7085 💻 parthorn.github.io in LinkedIn

Education

California Institute of Technology Sept 2022 – Expected June 2026
BS in Electrical Engineering and Applied Physics (Double Major) GPA: **4.2/4.0**

Research Experience

Painter Lab, Caltech Pasadena, CA
Research Assistant, supervised by Prof. Oskar Painter Apr 2024 – Present

- Develop a Josephson junction fabrication process based on the PICT method for improved device coherence
- Design and fabricate an electromagnetic cat qubit as a first step toward realizing a hybrid cat qubit incorporating a mechanical quantum memory
- Designed, fabricated, and characterized a superconducting transmon qubit module with 300% improved quantum coherence and a 30% higher photon absorption rate for integration with a quantum transducer

Nonlinear Photonics Laboratory, Caltech Pasadena, CA
Research Assistant, supervised by Prof. Alireza Marandi Jan 2023 – Present

- Lead the design and fabrication of on-chip coupled optical parametric oscillators to demonstrate spectral phase transitions and to serve as a foundation for developing an on-chip optical Ising machine
- Perform various optical characterization measurements, including fiber-chip-fiber transmission and quasi-phase-matching test
- Designed and fabricated various types of on-chip optical couplers using FDE, EME, and FDTD simulations for performance analysis

Teaching Experience

Teaching Assistant Pasadena, CA

- Hosted weekly office hours and recitation sessions for 20 - 150+ students
- Designed, graded, and wrote detailed solutions for exams and weekly problem sets

Methods of Applied Mathematics for the Physical Sciences (ACM 95/100b) Apr 2025 - June 2025

- Topics: Eigenvalue problems, transform methods, second-order PDEs, and Green's functions

Physics of Electrical Engineering (EE 40) Jan 2025 - Mar 2025

- Topics: Transmission lines, piezoelectricity, waveguides, resonators, semiconductor physics, and optoelectronic devices

Deterministic Analysis of Systems and Circuits (EE 44) Sept 2024 - Dec 2024

- Topics: Mathematical modeling of physical systems, deterministic analysis methods, and solution techniques like Laplace/Fourier transforms

Waves, Quantum Mechanics, and Statistical Physics (Ph 2a) Sept 2023 - Dec 2023

- Topics: Oscillations, waves, coupled oscillators, diffraction, Fourier analysis, and quantum mechanics

Awards

Henry Ford II Scholar Award (details 🔗)	2025
Soli Deo Gloria SURF Fellowship	2025
Nellie Bergen and Adrian Foster Tillotson SURF Fellowship	2024
Caltech Summer Undergraduate Research Fellowship (SURF)	2023
Silver Medal, International Physics Olympiad (IPhO)	2021

Relevant Courses (Graduate-Level)

Physics/Math	Complex Analysis, ODEs, and PDEs; Electromagnetic Theory for Photonics; Quantum Mechanics; Probabilistic Models; Quantum Electronics; Advanced Experimental Physics
EECS	Electromagnetic Engineering; Advanced Lasers and Photonics Lab; Advanced Digital Systems Design; Signals, Systems, and Transforms; Analog Circuit Design

Skills

Programming/Software	Python, MATLAB, Lumerical, Palace, Assembly, VHDL, Sonnet, Julia, Cadence
Technical Skills	E-beam Lithography (EBPGs), SEM, AFM, Qubit Characterization, Fiber-Chip Optical Measurements, Optical Alignment, Cryogenic Measurements
Languages	Thai (Native), English (Bilingual Proficiency)
