Zhizhi (Derek) Han

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EDUCATION

Keystone Academy, Beijing — Expected May 2027

IB Diploma Candidate — HL Physics, Design Technology, Mathematics AA; SL Geography, English A, Chinese A. Predicted IB: 40/42 subject points (TOK/EE pending). SAT 1540 (740 EBRW / 800 Math). TOEFL 114/120 (Reading 30, Listening 30, Speaking 25, Writing 29).

SUMMER PROGRAMS

WPI Frontiers — Aerospace Engineering — July 2024

- Conducted wind-tunnel experiments and designed model aircraft.

Experimental Physics Research Academy — July–August 2026

- Studied mechanics, electromagnetism, quantum dynamics, and astrophysics; completed a final project on wind-farm layout and efficiency.

HONORS & AWARDS

- **USA Computing Olympiad** — Gold Division; Silver Division, Grade 10.
- **HiMCM** — Meritorious Award, top 13% worldwide.
- **Conrad Challenge** — China Finalist; Best Innovation Award, Energy & Environment.
- **Generation AI 24-Hour Computer Vision Hackathon** — 2nd of ~35 teams.
- **Berkeley Mini Math Tournament** — 8th nationally in Puzzle Round; Gold in Relay Round; Silver overall.
- **TEDx Keystone Academy** — Speaker.

RESEARCH & ENGINEERING

Calico Wind Tunnels — Founder, Designer & Experimental Engineer — November 2025–Present

- Designed and built two open-source educational wind tunnels: the 3.5 m Calico Biggie (400×400×800 mm test section, 15 m/s) and the sub-$15 Calico Kitten.
- Led parametric Onshape CAD and CNC, laser, and 3D-printed fabrication; kept the Biggie prototype to ~$550 and published a public build log.
- Open-sourced the design files, trained peers, and supported replication at another Beijing school.

Student Musicals — Backstage Engineering Director & Structural Designer — 2024–2026

- Engineered a 3.6 m working pendulum clock for Weimar Pendulum and a 4.5 m suspended closet structure for Smash the Wall.
- Applied load calculations and structural redundancy to address safety risks in live performances; coordinated fabrication and rigging with the production team.

RC Catamarans & Gliders — Designer & Fabricator — 2024–2026

- Iterated three 1 m catamarans (2-minute disassembly, over 1-hour runtime) and two glider airframes; Onshape CAD, composite and 3D-printed construction, and field testing.

LEADERSHIP & ACTIVITIES

Aerospace Club — Founder, President & Engineering Instructor — 2025–Present

- Founded the school's first aerospace club; led 22 members; designed and taught a 12-week aerodynamics curriculum; guided glider, rocket, and F1-wing projects.

FRC Team 9411/10558 — Founding Member, Engineering Captain (1 year) & Lead Driver — 2023–2026

- Co-founded a 20+ member team; secured ~$15K in funding and workspace; led mechanical design and prototyping; mentored younger members.

KEyTEC Engineering & Fabrication Workshop — Founding Cohort & Peer Equipment Trainer — 2025–Present

- First student trained on CNC router and waterjet; trained peers and refined designs for fabrication.

Parsecs — Founder, Editor & Worldbuilder — 2025–Present

- Built a collaborative hard-sci-fi wiki linking physics, engineering, sociology, and literature; authored and edited 50+ pages; built an interactive starmap.

SKILLS & INTERESTS

Programming: Python, C++; computer vision.
CAD & Fabrication: Onshape, Rhino, parametric design; 3D printing, CNC router, waterjet, laser cutting, soldering, Arduino/ESP32.
Languages: Mandarin (native), English (fluent), German (learning).
Interests: aerospace, public transit, urban planning, archery, cooking, hard sci-fi, simulation games.