ZEKANG GONG

Jiang'an Campus, Sichuan University, Chengdu, China

(+86) 13307270761⋄ gongzekang@stu.scu.edu.cn

REFERENCES

Associate Professor **Chao Liang** (Advisor)
Professor **Jean-Paul Ampuero** (Visiting Student Advisor)

EDUCATION

Sichuan University
Bachelor of Engineering *Sept. 2021 - June 2025(expected)*
Major in Mechanics & Software Engineering College of Architecture and Environment
GPA: 3.61 Rank: 3/30 (10%)

Core Courses:
Theory of Viscoelasticity, Material Dynamics Behavior and its Application, Elastic Mechanics, Fluid Mechanics, Mathematical Methods in Engineering, Data Structures and Algorithmic, Operating System, Complex Functions and Integral Calculus Conversion, Numerical Methods, etc.

Geoazur Laboratory

RESEARCH INTERESTS

I am motivated by the use of **theoretical and computational** methods to study geophysical phenomena such as **volcanoes, earthquakes**. I am excited about exploring the Earth and aim for my research to elucidate observational data through a fundamental physics study of the mechanisms behind geophysical events.

PROJECTS

Deep Neural Network Based Surrogate Model for Earthquake Rupture Simulation
Supervisor: Associate Professor Chao Liang, IDMR, Sichuan University *Feb. 2023 - Apr. 2024*

- Analysed fault distribution of initial stress condition and frictional parameters.
- Used supercomputers to run rupture dynamics simulations and collect final slip and rupture front data sets.
  In this project, I collaborated with an another undergraduate student and a paper is under review.

Boundary Element Method for Fluid-filled Crack
Supervisor: Associate Professor Chao Liang, IDMR, Sichuan University *Apr., 2023 - Present*

- Derived elastodynamics and fluid boundary integral in frequency domain, following former papers.

- Implemented Matlab code to simulate seismic waves scattered by hyfrofractures in frequency domain, reproducing Pointer 1998.
- Derived Green's function and Boundary Integral Representation for linearized NS equation for compressible fluid

Quadlayer Krauklis Wave Model for Explaining VLP Tremors in the Gulf of Guinea
Supervisor: Associate Professor Chao Liang, IDMR, Sichuan University *Apr., 2024 - Present*

- Former research on unraveling the excitation mechanism of VLP tremors (Yingjie Xia et al., 2022) simplified the sill horizontal motion and not consider the covering ocean. It's interesting to derive more rigorous dispersion and oscillatory model for quad layer system containing a inviscid ocean, a thin crust, an viscous magmatic sill and elastic half space.
- Formulated governing equations and boundary conditions, there are matrix to be solved and code to be implemented.

ABSTRACTS

Programming: C++, Matlab, SQL, Shell
Techniques: Linux, Docker, Git
Languages: Native in Mandarin Chinese and fluent in English

PAPER

Programming: C++, Matlab, SQL, Shell
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AWARDS

Programming: C++, Matlab, SQL, Shell
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ACTIVITIES

Programming: C++, Matlab, SQL, Shell
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SKILLS

Programming: C++, Matlab, SQL, Shell
Techniques: Linux, Docker, Git
Languages: Fluent in English and native in Mandarin Chinese