

KADEK HENDRAWAN PALGUNADI

Building 1 (Al-Khawarizmi) Level 3 3139-WS43 ◊ KAUST, Saudi Arabia

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EDUCATION

King Abdullah University of Science and Technology (KAUST) *Sep. 2018 - Sep. 2023*
Ph.D in Seismology

Research topic: Earthquake dynamics in multi-scale fracture networks

Institute de Physique du Globe de Paris (IPGP) *2017 - 2018*
M.Sc in Geophysics (*Magna cumlaude 15.81/20*)

Thesis: Improvement of spatio-temporal microseismic monitoring in real-time measurement at Garpenberg Mine, Sweden

Institut Teknologi Bandung (ITB) *2012 - 2016*
B.Sc in Geophysics (*cumlaude 3.80/4.00*)

Final project: Steam and Brine Zone Prediction around Geothermal Reservoir Derived from Delay Time Seismic Tomography and Anisotropy Case Study: "PR" Geothermal Field

RESEARCH INTEREST

Earthquake Physics
Observational Seismology
High Performance Computing

EXPERIENCE

Graduate Research Internship *January 2018 - June 2018*
Intern at IPGP and Ineris

- Developing a program to detect and locate microseismic events in very high frequency (> 1kHz) band in near real-time as an underground deep mining monitoring system. This program has been implemented in deep mine Garpenberg, Sweden.

PT. LAPI ITB *September 2016 - June 2017*
Research Assistant

- Responsible for developing seismological geothermal software project.
- Deploying seismometer for earthquake aftershock monitoring in North of Sumatra.
- Conducting microtremor survey for hydrocarbon exploration.

SKILLS

Programming and Scripting languages	Python, Fortran, C, C++, Bash, CSS, MATLAB, HTML, GMT, Latex, Pandas, SQL
Seismological data analysis	SAC, pyrocko, Obspy, SEISAN, SIMULPS, PyLith, SeisSol
Languages	Bahasa (mother language), English (fluent), French (intermediate)

AWARDS & ACHIEVEMENTS

2 nd Winner International ARMA Student Research Contest	Fall 2022 - Spring 2023
Dean's Award Physical Science and Engineering Program	Spring 2022
KAUST Fellowship	Fall 2018 - Present
1 st rank at International Master in Geophysics, Université de Paris	Fall 2018
Geophysical Paris Exploration Fellowship	Fall 2017 - Fall 2018
Outstanding academic achievement at FTTM ITB	Fall 2012 - Spring 2016
1 st Winner Seismic Data Interpretation Brawijaya Geophysics Festival	Fall 2015
2 nd Winner at Student Competition Joint Convention Balikpapan, Indonesia	Fall 2015
The best Junior Geophysicist at fieldwork	Spring 2015

GUEST LECTURE AND INVITED SPEAKER

Invited Speaker at International Indonesian Scientist Forum, Online	Fall 2022
Sharing Presentation with Institut Teknologi Bandung	Fall 2022
Sharing Presentation with The National Research and Innovation Agency, Indonesia	Fall 2021
Guest Lecture on Fundamental of Seismic Tomography at Pertamina University	Spring 2021
Sharing Presentation with Institut Teknologi Bandung	Fall 2020
Invited Speaker at International Forum on Pohang Earthquake	Fall 2020

PUBLICATIONS

Articles in refereed journals (in preparation):

1. **K. H. Palgunadi**, A.-A. Gabriel, D. I. Garagash, T. Ulrich, P. M. Mai, 2023, *Rupture Dynamics of Cascading Earthquakes in a Multiscale Fracture Network Dynamics*, (minor revision.)
2. **K. H. Palgunadi**, A.-A. Gabriel, D. I. Garagash, T. Ulrich, P. M. Mai, 2023, *Ground Motion Characteristics of Cascading Earthquake in a Multiscale Fracture Network*, (in prep.)
3. A.-A. Gabriel, D. Garagash, **K. H. Palgunadi**, P. M. Mai, 2023, *Fault-size dependent fracture energy explains multi-scale seismicity and cascading earthquakes*, (Revision.)
4. **K. H. Palgunadi**, A.-A. Gabriel, E. Tinti, M. Cocco, P. M. Mai, 2023, *Dynamic Rupture Cascade of Microearthquakes ($M_w < 1.5$) Embedded in Fault Zone*, (in prep.)

Articles in refereed journals:

1. P. Supendi, T. Winder, N. Rawlinson, C. A. Bacon, **K. H. Palgunadi**, A. V. H. Simanjuntak, A. Kurniawan, S. Widiyantoro, A. D. Nugraha, H. A. Shiddiqi, S. P. Adi, D. Karnawati, G. I. Marliyani, I. Imran, and J. Jatnika, 2023, *A conjugate fault revealed by the destructive M_w 5.6 (November 21, 2022) Cianjur earthquake, West Java, Indonesia*, *Journal of Asian Earth Sciences*: 105830.
2. A.V.H. Simanjuntak, **K.H. Palgunadi**, P. Supendi, D.Daryono, T.A.Prakoso, and U. Muksin, 2023, *New Insight on the Active Fault System in the Halmahera Volcanic Arc, Indonesia, Derived from the 2022 Tobelo Earthquakes*, *Seismological Research Letter*, XX, 1–9, doi:10.1785/0220230006.
3. P.M. Mai, T. Aspiotis, T. A. Aquib, E. V. Cano, D. Castro-Cruz, A. Espindola-Carmona, B. Li, X. Li, J. Liu, R. Matrau, A. Nobile, **K. H. Palgunadi**, M. Ribot, L. Parisi, C. Suhendi, Y. Tang, B. Yalcin, U. Avşar, Y. Klinger, and S. Jónsson, 2023, *The destructive earthquake doublet of February 6, 2023, in south-central Türkiye and northwestern Syria: initial observations and analyses*, *The Seismic Record* 2023; 3 (2): 105–115. doi: <https://doi.org/10.1785/0320230007>.

4. P. Supendi, N. Rawlinson, S. Prayitno, D. Sianipar, A. Simanjuntak, S. Widiyantoro, **K. H. Palgunadi**, A. Kurniawan, H. A. Shiddiqi, A. D. Nugraha, D. P. Sahara, D. Daryono, R. Triyono, S. P. Adi, D. Karnawati, G. Daniarsyad, S. Ahadi, I. Fatchurochman, S. D. Anugrah, N. Heryandoko, A. Sudrajat, 2023, *A previously unidentified fault revealed by the February 25, 2022 (Mw 6.1) Pasaman Earthquake, West Sumatra, Indonesia*, *Physics of the Earth and Planetary Interiors*, 334, 106973, <https://doi.org/10.1016/j.pepi.2022.106973>
5. P. Supendi, N. Rawlinson, B.S. Prayitno, S. Widiyantoro, A. Simanjuntak, **K. H. Palgunadi**, A. Kurniawan, G.I. Marliyani, A.D. Nugraha, D. Daryono, and S.D. Anugrah, 2022. *The Kalaotoa Fault: A Newly Identified Fault that Generated the M w 7.3 Flores Sea Earthquake*, *The Seismic Record*, 2(3), pp.176-185.
6. P. Supendi, D. Sianipar, S. Widiyantoro, N. Rawlinson, B.S. Prayitno, M.T. Gunawan, M. Sadly, D. Karnawati, A.D. Nugraha, **K. H. Palgunadi**, and F. Muttaqy, 2022. *Analysis of the April 10, 2021 (Mw 6.1) destructive intra-slab earthquake, East Java, Indonesia*, *Physics of the Earth and Planetary Interiors*, 326, p.106866.
7. P. Supendi, S. Widiyantoro, N. Rawlinson, A. Wibowo, P. Priyobudi, **K. H. Palgunadi**, A. D. Nugraha, I. Imran, G. I. Marliyani, D. Daryono, and B. S. Prayitno, 2022. *Analysis of the 2021 Semangko Bay Earthquake Sequence in Southern Sumatra, Indonesia, Using Broadband Seismic Network Data*, *Seismological Research Letters*, doi: <https://doi.org/10.1785/0220210304>
8. P. Supendi, M. Ramdhan, D. Sianipar, A. Wibowo, M. T. Gunawan, S. Rohadi, N. F. Riama, B. S. Prayitno, J. Murjaya, D. Karnawati, I. Meilano, N. Rawlinson, S. Widiyantoro, A. D. Nugraha, G. I. Marliyani, **K. H. Palgunadi**, E. M. Elsera, 2021, *Foreshock–mainshock–aftershock sequence analysis of the 14 January 2021 (Mw 6.2) Mamuju–Majene (West Sulawesi, Indonesia) earthquake*, *Earth, Planets and Space* 73, 106, doi: <https://doi.org/10.1186/s40623-021-01436-x>
9. **K. H. Palgunadi**, A.-A. Gabriel, T. Ulrich, J. À. Lòpez-Comino, and P. M. Mai, 2020, *Dynamic Fault Interaction during a Fluid-Injection-Induced Earthquake: The 2017 Mw 5.5 Pohang Event*, *Bulletin of the Seismological Society of America*, doi: 10.1785/0120200106
10. J. L. Kinscher, F. De Santis, N. Poiata, P. Bernard, **K. H. Palgunadi**, and I. Contrucci, 2020, *Seismic repeaters linked to weak rock-mass creep in deep excavation mining*, *Geophysical Journal International*, Volume 222, Issue 1, Pages 110–131, doi: 10.1093/gji/ggaa150
11. **K. H. Palgunadi**, N. Poiata, J. Kinscher, P. Bernard, F. De Santis, and I. Contrucci, 2019, *Methodology for Full Waveform Near Real-Time Automatic Detection and Localization of Micro-seismic Events Using High (8 kHz) Sampling Rate Records in Mines: Application to the Garpenberg Mine (Sweden)*, *Seismological Research Letters* ; 91 (1): 399–414. doi: 10.1785/0220190074
12. P. Supendi, A. D. Nugraha, S. Widiyantoro, C. I. Abdullah, N. T. Puspito, **K. H. Palgunadi**, D. Daryono, and S. H. Wiyono, 2019, *Hypocenter relocation of the aftershocks of the Mw 7.5 Palu earthquake (September 28, 2018) and swarm earthquakes of Mamasa, Sulawesi, Indonesia, using the BMKG network data*, *Geoscience Letters* 6, 18, doi: 10.1186/s40562-019-0148-9
13. A. R. Gusman, P. Supendi, A. D. Nugraha, W. Power, H. Latief, H. Sunendar, S. Widiyantoro, D. Daryono S. H. Wiyono, A. Hakim, A. Muhari, X. Wang, D. Burbidge, **K. H. Palgunadi**, I. Hamling, and M. R. Daryono, 2019, *Source model for the tsunami inside Palu Bay following the 2018 Palu earthquake, Indonesia*, *Geophysical Research Letters*, 46, 8721– 8730. doi: 10.1029/2019GL082717
14. Z. Zulfakriza, A. D. Nugraha, M. Ridwan, **K. H Palgunadi**, M. Umar, M. Muzli, K. Erbas, and D. Daryono, 2018, *Temporary Seismic Stations Installation and Building Damage Assessment of*

Articles in non-refereed conference journals, abstracts, posters:

1. **K. H. Palgunadi**, A.-A. Gabriel, E. Tinti, M. Cocco, P. M. Mai, 2023, *Cascading Rupture Characteristics on Deca-Scale Earthquake Through 3D Dynamic Rupture Simulations*, presented at the 2023 FEAR-Annual-Meeting, 29 March - 31 March 2023, Rome, Italy. (Poster)
2. **K. H. Palgunadi**, J. C. Vyas, A.-A. Gabriel, E. Tinti, M. Cocco, P. M. Mai, 2023, *Investigation of Cascading Earthquake Rupture in Deca-Scale Earthquake Experiment Using Dynamic Simulation*, presented at the 2023 ACES, 28 February - 4 March 2023, Blenheim, New Zealand. (Poster)
3. **K. H. Palgunadi**, A. A. Gabriel, D. Garagash, T. Ulrich and P. M. Mai, 2022, *How Does A Cascading Earthquake in A Multi-Scale Fracture Network Affect Ground Motion*, presented at the 2022 SEACG, 9-10 August 2022, Bandung, Indonesia, SEACG-19. (Oral Presentation)
4. **K. H. Palgunadi**, A. A. Gabriel, D. Garagash, T. Ulrich and P. M. Mai, 2022, *Cascading Earthquake Rupture During Fluid Injection Scenarios in A Multi-Scale Fracture Network*, presented at the 2022 SEG/SPE Injection Induced Seismicity Workshop: A Decade of Learnings, 7-9 June 2022, Austin, Texas, USA. (Poster)
5. D. Garagash, A. A. Gabriel, **K. H. Palgunadi**, and P. M. Mai, 2021, *Scale dependence of fault fracture energy and multi-scale rupture cascades*, presented at the 2021 Fall Meeting, AGU, New Orleans, Louisiana, 13–17 December, S51D-07
6. **K. H. Palgunadi**, A. A. Gabriel, D. Garagash, and P. M. Mai, 2021, *Cascading Earthquake Rupture in A Multi-Scale Fracture Network*, presented at the 2021 Fall Meeting, AGU, New Orleans, Louisiana, 13–17 December, S22A-04. (Poster)
7. P. Supendi, A. D. Nugraha, S. Widiyantoro, C. I. Abdullah, D. Karnawati, **K. H. Palgunadi**, S. Rohadi, M. T. Gunawan, and S. Rosalia, 2021, *Analysis of the Mw 6.5 Ambon Earthquake (September 26, 2019) based on the aftershocks hypocenter relocation*, In IOP Conference Series: Earth and Environmental Science (Vol. 873, No. 1, p. 012001), IOP Publishing.
8. M. Ramdhan, A. Mursityanto, and **K. H. Palgunadi**, 2021, *Analysis of M 5.3 Sumbawa, Indonesia earthquake 2020 and its aftershocks based on hypocenter relocation from BMKG seismic stations*, In IOP Conference Series: Earth and Environmental Science (Vol. 873, No. 1, p. 012070), IOP Publishing.
9. **K. H. Palgunadi**, A.-A Gabriel, D. Garagash, P. M. Mai, 2021, *Cascading earthquakes on a fracture network in a geo-energy reservoir*, presented at the 2021 Annual Meeting, EGU, online, 19 - 30 April, EGU21-16385, doi: <https://doi.org/10.5194/egusphere-egu21-16385>. (Oral Presentation)
10. P. Supendi, A. D. Nugraha, S. Widiyantoro, A. Daryono, **K. H. Palgunadi**, M. D. Mukti, 2020, *Preliminary Results of Hypocenter Relocation Analysis in the Sunda Strait, Indonesia, after the 2018 Anak Krakatau Tsunami*, presented at the 2020 Fall Meeting, AGU, Online, December, 2020AGUFMS039.0014S
11. T. Taufiqurrahman, A.-A Gabriel, B. Li, D. Li, A. S. Wirp, T. Ulrich, **K. H. Palgunadi**, A. Verdecchia, S. Carena, Z. K. Mildon, 2019, *High-resolution integrated dynamic rupture modeling of the 2019 M6. 4 Searles Valley and M7. 1 Ridgecrest earthquakes*, presented at the 2019 Fall Meeting, AGU, San Francisco, California, 7–11 December, S31G-0487
12. **K. H. Palgunadi**, T. Ulrich, A.-A. Gabriel, J. À. Lòpez-Comino, P. M. Mai, 2019, *Dynamic rupture modeling for the largest induced event linked to an Enhanced Geothermal System: the 2017*

Mw 5.5 Pohang earthquake, presented at the 2019 Fall Meeting, AGU, San Francisco, California, 7–11 December, T31E-0336P. (Poster)

13. R. V. Ry, D. P. Sahara, M. Rohaman, C. Suhendi, **K. H. Palgunadi**, S. Widiyantoro, A. D. Nugraha, T. Yudistira, B. S. Prabowo, and B. Mujihardi, 2019, *Implementation of GMSTech—a New Practical Software for Microseismic Data Processing—for Estimating Event Source Parameters*, J. Phys.: Conf. Ser. 1204 012096, doi: 10.1088/1742-6596/1204/1/012096
14. J. Kinscher, **K. H. Palgunadi**, N. Poiata, F. de Santis, P. Bernard, I. Contrucci, and E. Klein, 2019, *Automatic full wave-form based monitoring at the deep Garpenberg metal mine*, presented in 3rd Schatzalp Workshop on Induced Seismicity, Mar 2019, Davos, Switzerland. (ineris-03237763)
15. **K. H. Palgunadi**, N. Poiata, J. Kinscher, P. Bernard, and F. De Santis, 2019, *Automatic full waveform-based monitoring of induced microseismicity at Garpenberg mine, Sweden*, Geophysical Research Abstracts, Vol. 21, p1-1. 1p, presented at the 2019 EGU General Assembly, Vienna, 7–12 April
16. N. Poiata, **K. H. Palgunadi**, J. Kinscher, P. Bernard, F. de Santis, and E. Klein, 2019, *Full waveform-based automatic monitoring of microseismic activity using high sampling rate records: application to Garpenberg mine (Sweden)*, presented at the Japan Geoscience Union Meeting, May 2019, Chiba, Japan. (ineris-03237722)
17. J. Kinscher, **K. H. Palgunadi**, N. Poiata, F. De Santis, P. Bernard, and E. Klein, 2018, *Full wave-form, automatic real-time monitoring of high sampling seismic data in a metal mine: detection, location, event classification and seismic repeater matching*, presented at the 2018 Fall Meeting, AGU, San Francisco, California, 10–14 December, S31F-0573K

MEMBERSHIPS

American Geophysical Union (AGU)

European Geosciences Union (EGU)

Himpunan Ahli Geofisika Indonesia (HAGI)

REFERENCES

Dr. Paul Martin Mai (martin.mai@kaust.edu.sa)

Dr. Alice-Agnes Gabriel (algabriel@ucsd.edu)

Dr. Dmitry Garagash (garagash@dal.ca)

Dr. Thomas Finkbeiner (thomas.finkbeiner@kaust.edu.sa)

Dr. Sri Widiyantoro (ilikwidi@gmail.com)