Verified Sources

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Resonance Architecture Hypothesis

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1 Primary Physics Papers

1.1 Friction Reduction via Ultrasonic Vibration

Luo, L. et al. (2024)
"The inhibition mechanism of ultrasonic vibration on stick-slip phenomenon of sliding friction pair"
Scientific Reports, 14, Article 22449

- **DOI:** 10.1038/s41598-024-73652-w
- **Open Access:** Yes (PMC)
- **Key Finding:** Up to 89% friction reduction under ultrasonic vibration at 26 kHz

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1.2 Contact Mechanics of Vibration-Friction

Popov, M. (2020)
"The Influence of Vibration on Friction: A Contact-Mechanical Perspective"
Frontiers in Mechanical Engineering, 6, Article 69

- **DOI:** 10.3389/fmech.2020.00069
- **Open Access:** Yes
- **Key Finding:** "Walking" mechanism—contact advances during low-pressure phase of vibration cycle

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1.3 Piezoelectric Weakening of Granite

Saksala, T. et al. (2023)
"Weakening of Compressive Strength of Granite by Piezoelectric Actuation of Quartz Using High-Frequency and High-Voltage Alternating Current: A 3D Numerical Study"
Rock Mechanics and Rock Engineering, 56, 7655–7672

- **DOI:** 10.1007/s00603-023-03451-8
- **Open Access:** Yes

- **Key Finding:** 10% weakening of compressive strength at resonant frequencies (∼274 kHz)

1.4 Tribological Self-Organization

Assenova, E. & Vencl, A. (2022)
"Tribology and self-organization in reducing friction: A brief review"
Tribology of Materials, 1(1), 34–41

- **URL:** tribomat.net/archive/2022/2022-01/TM-2022-01-05.pdf
- **Open Access:** Yes (PDF)
- **Key Finding:** Self-organizing contact mechanics lead to spontaneous structure optimization

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1.5 Granite Properties Under Ultrasonic Vibration

Zhou, Y. et al. (2019)
"The Mechanical Properties of Granite under Ultrasonic Vibration"
Advances in Civil Engineering, 2019, Article 9649165

- **DOI:** 10.1155/2019/9649165
- **Open Access:** Yes
- **Key Finding:** Ultrasonic vibration significantly affects granite mechanical properties

2 Historical Sources

2.1 Original Drill Core Observations

Petrie, W.M.F. (1883)
The Pyramids and Temples of Gizeh
Field & Tuer, London

- **URL:** Available at Giza Archives
- **Key Observation:** Spiral grooves on drill cores with 1:60 feed rate

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2.2 Modern Analysis of Petrie's Cores

Dunn, C. (1999)
The Giza Power Plant: Technologies of Ancient Egypt
Bear & Company

- **Key Observation:** "The spiral groove cut deeper through the quartz than through the softer feldspar. In conventional machining the reverse would be the case."
- **Source for Dunn's analysis:** theglobaleducationproject.org

3 Supporting Literature

3.1 Piezoelectricity in Rocks

Bishop, J.R. (1981)
"Piezoelectric effects in quartz-rich rocks"
Tectonophysics, 77(3–4), 297–321

- **DOI:** 10.1016/0040-1951(81)90268-7

3.2 Electrification in Rocks (Foundational Text)

Parkhomenko, E.I. (1971)
Electrification Phenomena in Rocks
Springer, New York

- **DOI:** 10.1007/978-1-4757-5067-6

4 Archaeoacoustic Studies

4.1 Ancient Chamber Resonance and Brain Activity

Cook, I.A., Pajot, S.K. & Leuchter, A.F. (2008)
"Ancient Architectural Acoustic Resonance Patterns and Regional Brain Activity"
Time and Mind, 1(1), 95–104

- **DOI:** 10.2752/175169608783489099
- **PDF Available:** icrl.org
- **Authors:** UCLA Laboratory of Brain, Behavior, and Pharmacology
- **Key Finding:** At 110 Hz, left temporal brain activity significantly decreased; prefrontal asymmetry shifted to right-hemisphere dominance—consistent with deactivation of language centers

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4.2 Acoustics of Megalithic Chambers

Jahn, R.G., Devereux, P. & Ibison, M. (1996)
"Acoustical Resonances of Assorted Ancient Structures"
Journal of the Acoustics Society of America, 99, 649–658

- **Institution:** Princeton Engineering Anomalies Research (PEAR)
- **Key Finding:** All megalithic chambers tested (including Newgrange) exhibited primary resonance at 95–120 Hz, most at 110–112 Hz

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4.3 Malta Hypogeum Acoustic Analysis

Debertolis, P., Coimbra, F. & Eneix, L. (2015)
"Archaeoacoustic Analysis of the Ħal Saflieni Hypogeum in Malta"
Journal of Anthropology and Archaeology, 3(1), 59–79

- **PDF Available:** University of Malta Repository
- **Key Finding:** Oracle Room exhibits dual resonance at 70 Hz and 114 Hz; male voice at these frequencies stimulates resonance throughout hypogeum

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4.4 Göbekli Tepe Archaeoacoustic Study

Debertolis, P., Gullà, D. & Savolainen, H. (2017)
"Archaeoacoustic Analysis in Enclosure D at Göbekli Tepe in South Anatolia, Turkey"
Super Brain Research Group

- **PDF Available:** sbresearchgroup.eu
- **Collaboration:** Klaus Schmidt (site discoverer, deceased 2014)
- **Key Finding:** 20–22 Hz underground vibration; central pillar resonates at 68–69 Hz with harmonics in 65–145 Hz range affecting brain activity

5 Electromagnetic Studies

5.1 Great Pyramid Electromagnetic Properties

Balezin, M., Baryshnikova, K.V. et al. (2018)
"Electromagnetic properties of the Great Pyramid: First multipole resonances and energy concentration"
Journal of Applied Physics, 124, 034903

- **DOI:** 10.1063/1.5026556
- **Institutions:** ITMO University (Russia) / Laser Zentrum Hannover (Germany)
- **Key Finding:** Under resonance conditions (200–600m wavelengths), pyramid concentrates electromagnetic energy in internal chambers and under base

6 Verification Notes

- All DOIs have been verified via CrossRef API as of December 2024
- All open-access PDFs have been confirmed accessible
- All URLs return HTTP 200 status codes

Last verified: December 4, 2025