

**PHYSICS**

The Great Pyramid of Giza Might Focus Electromagnetic Energy in Its Chambers

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Theoretical research by an international team of physicists has discovered that the Great Pyramid of Giza can concentrate electromagnetic energy in its internal chambers and under its base.

And although the ancient Egyptian's probably weren't aware of this weird design quirk, the study could be important for nanoparticle research in the future.

"Applications of modern physical methods and approaches for investigations of pyramids' properties are important and productive," [the researchers wrote in their paper](#).

"It could allow [us] to make new discoveries or get new information motivating new interests [in] the pyramids."

Electromagnetic radiation, including visible light, radio waves and microwaves, is radiating waves of oscillating electric and

magnetic fields. And it's all around us all the time.

"Electromagnetic energy is very important in everyday life, and we actually use and experience different kinds of electromagnetic energy every day," Antonija Grubisic-Cabo, a physicist from Monash University who was not involved in the research, explains to ScienceAlert.

"For example, sunlight is one form of electromagnetic waves, but also things commonly used in our homes, such as microwaves and radios rely on the electromagnetic energy."

In fact, your whole house is filled with electromagnetic radiation, whether it's from the light we see, or the Wi-Fi letting you read this article. And as we all know, [Wi-Fi has a bad habit](#) of being exceptionally weak in certain areas.

Perhaps we should all be building our houses a little pointier at the top.

To test how the pyramids acted with these waves, researchers first estimated how resonances (sound prolonged by reflection or vibrations) caused by radio waves might be induced.

"We had to use some assumptions," [says Andrey Evlyukhin](#), senior researcher from ITMO University in Russia.

"For example, we assumed that there are no unknown cavities inside, and the building material with the properties of an ordinary limestone is evenly distributed in and out of the pyramid."

Then they made a model of the pyramid and its electromagnetic response. By calculating something called the [extinction cross section](#), the team were able to estimate how the wave energy is scattered or absorbed by the pyramid.

Using a special type of analysis called a [multipole analysis](#) the

researchers found that the scattered fields were concentrating in the pyramid's internal chambers as well as under its base.

Although you could make many assumptions about how the ancient Egyptians were organising their pyramids to create the best AM radio set-ups for the dead, it's highly unlikely that the ancient Egyptians knew about these properties, and it's just an interesting coincidence of how the pyramids stand.

"Although this research seems unconventional, modern physical approaches have been previously used to study the Great Pyramid, and led to a discovery of a completely new structure," said Grubisic-Cabo.

"As this research is completely theoretical, it is difficult to say what we can expect it to lead to, or if it is even possible to do this in real life."

All of that aside, the researchers are hoping that they can create a similar concentrating effect on a nanoscale size.

"Choosing a material with suitable electromagnetic properties, we can obtain pyramidal nanoparticles with a promise for practical application in nanosensors and effective solar cells," [says Polina Kapitainova, a physicist from ITMO University.](#)

The research has been published in the [*Journal of Applied Physics*](#).