What are the chances of aliens sniffing us out?

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Beaming signals into space to find ET could potentially be risky for Earth and its inhabitants. So researchers are developing a Richter-like scale to assess the chance that extraterrestrials could detect – and potentially react to – such signals.

Decades of passively monitoring microwave frequencies have failed to find any evidence of signals from extraterrestrial civilisations. Frustrated by the long silence, some researchers want to start transmitting signals towards nearby stars with possible habitable planets in a plan called "active SETI".

Enlarge image
Decades of monitoring the skies for signals from extraterrestrial life have turned up nothing (Image: NAIC/Arecibo Observatory/NSF)

However, others warn that this would be the equivalent of "shouting in the jungle", and that it is better to keep quiet for the time being. "Concerns range from worries about potential existential danger all the way to a desire for consensus about what should be said in such messages," says astrophysicist and science fiction writer David Brin, a leading voice of caution on an International Academy of Astronautics committee considering the issue.

To give the debate a "modest analytical basis", Iván Almár of Konkoly Observatory in Hungary and Paul Shuch of the SETI League in Little Ferry, New Jersey, US, have written a study proposing a way to rate the chance that aliens might detect terrestrial signals.

Called the San Marino Scale because it was first proposed in Europe's tiny Republic of San Marino, it rates the chance of a detection from 1 to 10 based on the strength and type of the transmission. The scale is split into two halves, each worth between 1 and 5. One part is based on signal intensity (compared to solar noise), the is other based on the type of signal.

The maximum rating for signal power is 5, for more than 100,000 times solar background. In terms of signal type, a simple radar aimed out into space will score low compared to a signal beamed back to a discovered alien source.

Overwhelming noise

Picking up signals from commercial radio and television broadcasts may well be difficult, says Shuch. Most signal information is transmitted in weak bands on each side of the central frequency, and broadcast antennas aim most of their transmitted power towards people on the surface. What little detectable power reaches space is likely to be overwhelmed by solar radio noise.

So a signal intensity at or below the level of solar background earns a minimum 0 rating. Aliens would have an easier time spotting the signals from over-the-horizon radars built during the Cold War, which directed much

of their power into space, Shuch told **New Scientist**. But those have since been shut down.

The transmission type also matters. A beacon such as an interplanetary radar that carries no message rates a 1, a brief message sent in an arbitrary direction for minutes or hours rates a 2, and a reply to an extraterrestrial source that would otherwise not know our presence rates a maximum of 5.

Ancient pyramid

Recently, humans have made tentative steps to make contact with potential extraterrestrial civilisations. Over the past few years, Russian radio astronomer Alexander Zaitsev has beamed relatively simple microwave signals three times from a radio telescope that Shuch says would have earned a rating of 4 to 6 on the San Marino scale.

And the Internet company Yahoo recently proposed beaming a "digitised time capsule" into space. Yahoo's plan was "a stunt that has got some serious scientists rather alarmed", Shuch told **New Scientist**. The company was forced to abandon it, however, after Mexican officials refused to allow a laser transmitter to be mounted on an ancient pyramid.

Still, a group called Cosmic Connexion has been gathering messages on its website for a Yahoo-like transmission that will also become part of a documentary to be aired on the European television channel Arte.

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