

1 Alien Contact More Likely by "Mail" Than Radio, Study Says

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3 Are we alone in the universe? In **pursuit** of an answer to that formidable question, scientists have for **decades** been
4 searching the skies with radio waves to pick up any signs of **alien** life. They may be looking in the wrong place. A
5 new study suggests it is more energy efficient to **communicate** across interstellar space by sending **physical**
6 material—a sort of message in a bottle—than **beams** of electromagnetic radiation. Solid matter can hold more
7 information and journey farther than radio waves, which disperse as they travel. Researchers speculate that other life-
8 forms may have already sent us messages, perhaps even as organic material **embedded** in asteroids that have struck
9 Earth. "Any **contact** that we might **establish** with **extraterrestrial** life-forms is more likely to **occur** from a physical
10 artifact than from electromagnetic communication," said Christopher Rose, a professor of electrical and computer
11 engineering at Rutgers University and co-author of the study. The theory is not new, but it is the first time it has been
12 quantified.

13 Humans have already sent inscribed information into outer space in the hope of reaching alien life. The Voyager 1
14 spacecraft has traveled more than 13.5 billion kilometers since its **launch** in 1977. It is carrying a 30-centimeter disk
15 **containing** a message from Earth: sounds and **images selected** by the late astronomer Carl Sagan and spoken
16 greetings in 55 languages. But the main **focus** among alien-hunters has been on electromagnetic radiation—radio and
17 optical waves. The private SETI (Search for Extraterrestrial Intelligence) Institute in Mountain View, California is
18 the most prominent organization **involved** in the search for intelligent life beyond Earth. The institute listens for radio
19 signals in interstellar space. So far, it has not **detected** any signs of alien life. That, however, does not prove there is
20 no alien life. Instead, it could be because radio signals get **diluted** as they travel across great distances in space, says
21 Rose. He has learned that the "energy budget" **required** for sending a radio signal **increases** with distance. Beams of
22 radiation are cone-shaped and grow in size as they travel outward, meaning the great **majority** of their energy is
23 **wasted**. Potential **recipients** may not even be capable of receiving the message. "There's no **guarantee** that there's
24 anything out there that is **evolved** enough to listen to the message, hear it, and decode it," Rose said. A far more
25 energy efficient way of communicating over great interstellar distances is to send a physical object with encoded
26 information, Rose said. Such a package is not diluted as it travels across space. It also stays where it lands. Humans
27 already have the technology to encode **dense** information—genetic material, for example—in incredibly small
28 packages. What we lack is the navigational **capability** to make sure the message gets to its destination.

29 Rose warns that humans may have been too **concerned** about trying to send and receive interstellar communication
30 in their own lifetime. It may take tens of thousands of years for a message to **reach** an alien civilization and just as
31 long for it to get back, Rose says. Trying to set up two-way communication may be a mistake. "The probability of
32 contacting someone in our galaxy and setting up two-way communication is **reasonably** low," he said. If the sender
33 isn't concerned about reaching the recipient and getting an answer in his or her own lifetime, inscribing and sending
34 material is the way to go, Rose said. "The nice thing about matter is that you send it once and it more or less stays
35 there," he said. The researchers **speculate** that there may be extraterrestrial packages already here in our planetary
36 backyard, perhaps in the **vicinity** of Jupiter, the sun, or the moon—or maybe even here on Earth in the form of
37 organic material embedded in an asteroid. "There might be many different messages from many different places
38 sitting all around us," Rose said. Woodruff Sullivan, an astronomy professor at the University of Washington in
39 Seattle, wrote that SETI should continue its radio wave research. But the institute should also be open to the idea of
40 one day finding an information-drenched **artifact**, sent by an alien civilization interested only in one-way
41 communication. "It is a scenario reminiscent of *2001: A Space Odyssey*, wherein a monolith discovered on the moon
42 is ... left by an extraterrestrial intelligence," Sullivan writes. "If astro-archaeologists were to find such an artifact, it
43 would hardly be the first time that science fiction had become science fact."

44 Adapted from [The National Geographic](#)