

Extraterrestrial Communication

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In a cover story for the journal *Nature*, Christopher Rose, professor of electrical and computer engineering at Rutgers, contends that **inscribing information and physically sending it to some location in deep [space](#) is more energy-efficient than pulsing it out on radio waves**, which disperse as they travel.

"Think of a flashlight beam," Rose says. "Its intensity decreases as it gets farther from its source. The same is true of the beam of a laser pointer, though the distance is much longer. The unavoidable fact is that waves, both light and radio, disperse over distance, and over great distance, they disperse a lot."

Rose and Gregory Wright, a physicist, are co-authors of a paper titled,

"Inscribed matter as an energy-efficient means of communication with an extraterrestrial civilization," the September 2 Nature paper. The paper grew out of Rose's work at the Wireless Information Network Laboratory (WINLAB) at Rutgers' School of Engineering. "Our original question was, 'How do you get the most bits per second over a wireless channel?'" Rose says. This led him to consider distance, and the "energy budget" required for sending a signal. The budget increases with distance, Rose contends, and the detectability of the signal diminishes. The less detectable a message is, the lower its speed.

In addition, Rose says, when waves pass a particular point, they've passed it for good. Potential recipients at that point might be unable to snag a passing message for any one of many reasons. They might not be listening. They might be extinct. So someone sending such a message would have to send it over and over to increase the chance of its being received. The energy budget goes up accordingly. A physical message, however, stays where it lands.

Rose is in favor of listening for that close encounter, but he thinks researchers should have their eyes open, too. Rose concedes that this idea may be hard to accept, but this difficulty arises from our concern about time. If the sender isn't concerned about reaching the recipient and getting an answer in his own lifetime, inscribing and sending is the way to go.

Source: Rutgers University

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