

# High-energy laser seen as a key in search for extraterrestrial life

Houston Chronicle News Services

PHILADELPHIA — Since the first search for extraterrestrial life a quarter century ago, astronomers have concentrated almost exclusively on looking for radio signals from some distant civilization.

That has been the wrong approach, said laser physicist John D.G. Rather.

If a distant civilization is advanced enough to attempt to communicate its existence, it will use high-energy lasers, Rather argued at the annual meeting of the American Association for the Advancement of Science.

"They certainly would want to succeed and they would very likely want to efficiently transmit huge amounts of data," he said.

Any other inhabited planet is at least a few light years away — the distance light travels in a year or about six trillion miles — and almost certainly tens, hundreds or even thousands of light years from Earth.

Thus, a civilization seeking to make contact would want to include enormous amounts of information about itself in any message, said Rather, vice president of Kaman Aerospace Corp. in Arlington, Va.

Laser beams can transmit vastly more information than radio signals in the same time span.

The question of whether intelligent beings populate other planets is one that has fascinated more than science-fiction fans.

Theologians have pondered the po-

tential religious significance of finding intelligent life elsewhere, and psychologists have wondered how finding out we are not alone would affect the world's psyche.

"It is one of those rare cases that is just as interesting, no matter what answer you get," said astronomer Robert Jastrow of Dartmouth College.

The first search for evidence of extraterrestrial beings was made in 1960 by astronomer Frank Drake, who turned a radio telescope on a few nearby stars in what he called "Project Ozma."

Since then, said astronomer Jill Tarter of the University of California, Berkeley, at least 47 attempts have been made to find extraterrestrial intelligence.

"All have been just small little stabs in the dark," Tarter said.

Tarter said it was "very timely to begin a systematic search" for signals from outer space. She said that prototype equipment capable of monitoring 74,000 radio frequencies for signals has been developed at Stanford University and has been used for the last year in Goldstone, Calif.

She said the equipment was developed under a NASA-sponsored five-year research and development program costing \$15 million a year. She said she would like to see Congress authorize \$77 million requested by NASA to begin a systematic 10-year search in 1990.

"We are starting a program that

may not bear fruit for a lifetime or for generations," said Tarter, who is helping develop equipment for the NASA project.

Tarter said that astronomers would soon have the ability to track and analyze 10 million different radio frequencies for signals from other civilizations.

The effort to find other life in the universe assumes that advanced civilizations emit signals either through "leakage" from radio, television or radar broadcasts on their planets or through specific attempts to communicate with other worlds.

Of course, even if intelligent life exists on other planets, making contact may never occur — for a number of reasons.

"There could be other worlds that are water covered and populated by very intelligent (creatures similar to) whales and dolphins," Tarter suggested.

Some scientists raised the possibility that Earth inhabitants might not be able to understand the messages sent out by other worlds.

But Tarter said that wouldn't bother her. She said she would be satisfied just to detect communications from other civilizations. "Because then we would have answered the question: Is there life elsewhere in the universe?"

The possibility of laser communications from another world has been largely ignored because of arguments that fail to consider that an advanced civilization would have laser tech-

nologies superior to ours, Rather said.

For example, people have argued that a laser's light would be blanked out by the brightness of the sun around which the inhabited planet orbited.

Rather argued that an advanced civilization would have developed lasers powerful enough to outshine their suns.

"What they (Earth-based astronomers) would look for is something unusual in the spectrum" of a distant star, Rather said.

Some also have argued that the vast amounts of dust in the plane of our galaxy would block laser light. Rather noted that many stars are outside the galactic plane and lasers from them would not be affected.

"The dust may be important or it may not be," he said. "If it is, you can go to the infrared wavelength or beyond, even into the X-ray wavelengths."

Infrared, ultraviolet, gamma- and X-ray lasers would be unaffected by the dust.

Rather said laser developments are occurring that will provide the technology to beam laser messages into deep space in the next century.

"This suggests we should try to determine what sort of transmitting devices make sense to people and civilizations different than our own," he said.

One possibility, he suggested, would be to use an uninhabited planet near the sun — something like Mercury — as a transmitting base. Robots would



Astronomer Frank Drake conducted the first search for evidence of extraterrestrial beings in 1960.

build huge solar arrays to convert the star's light into energy to power giant lasers.

Another possibility would be giant laser-transmitting spacecraft, perhaps sent to distant parts of the galaxy.

Contact with an advanced civilization would greatly affect Earth, and that might be the greatest motivating force for a distant people to make contact with less-intelligent beings, Rather suggested.

"They probably want to promulgate their culture and perpetuate themselves," he said. "The most profound implication of all this is that it is really a means of transferring an alien culture to new worlds" without ever visiting them.