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Mapping the Planets

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By Tim Barribeau

The reason for the increase in resolution is not an improvement in the laser itself, but a function of...
the increased scanning speed. Previously, LIDAR would only be able to scan point by point, so the amount of time required to generate a higher-resolution map was often prohibitive. With the new LIDAR’s ability to split the laser beam and scan large areas of landscape at once, this time period is significantly reduced. "It would be impossible to take the single pixel maps to one foot and cover the planet," says Figer. "But if you have an imager, now things become more possible."

The improvement in measuring depth is attributable to a new generation of high-speed circuitry that is able to differentiate two signals arriving only 100 picoseconds apart, which equates to a centimeter in height.

Figer’s faster system might also be better at mapping objects in motion. Due to the slower speed of the current technology, moving objects can appear multiple times in multiple scans, which makes it difficult to accurately reproduce a single point in time.

While the system is primarily designed for extraplanetary missions, Figer believes that it could be used in other ways. "Imagine," he says, "that you have this 3-D, 180-degree fish-eye system . . . in every city scanning continuously for biohazards."

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