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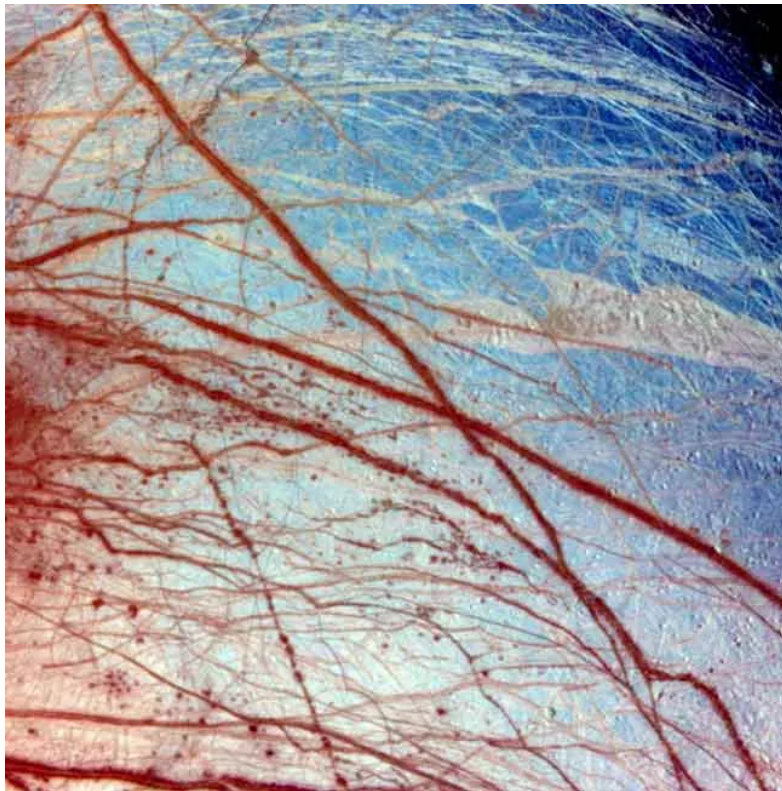
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## Tougher Cameras Designed to Withstand Space Radiation

August 22, 2007



Europa, a moon among many circling Jupiter, appears to have a putative ocean hidden under its frozen surface crust. Tougher cameras, however, will be necessary to scope out the water regions beneath its shell of ice. (Image credit: NASA)

Future spacesnapshots could reveal the existence of lakes or oceans on Jupiter's moon Europa, suggesting the possibility of alien life, and astronomers have now built an

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thenoise and such as the or difficult.

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solar system,? said Melissa McGrath, chief scientist inthe Science and Mission Systems Office at NASA Marshall Space Flight Center.

The technology driving the new detector is a capturing system that immediately converts electromagnetic signals into digital information, pixel by pixel. The method bypasses the standard pathway traveled by analog signals from sensors to the point where the signal is converted to digital data.

High-energy radioactive particles in space degrade these circuits, or pathways, over time and add to noise in the data by making pixels appear artificially bright.

The new device avoids such pitfalls, said project leader Donald Figer, director of the Rochester Imaging Detector Laboratory at Rochester Institute of Technology.

"Our detector converts the analog signal to a digital number within the pixel," Figer told *LiveScience*. "Radiation does not have time to affect the signal. And once the data is digitized it's essentially impossible to pick up noise."

The detector will also be less susceptible to charge traps that can build up in instruments under exposure to radiation, further degrading the signal.

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