***Antigravity***

**Reducing the Gravity of a Spacecraft Could Save Significant Amounts of Money**

**Weighty Implications: NASA Funds Controversial Gravity Shield**
by Jack Lucentini

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Brushing aside controversy and a few glitches, NASA officials are forging ahead with plans to build a device that they say could work as an antigravity machine.

Most scientists say the idea of such a gadget is ludicrous. But given the stakes, NASA officials say, it's worth a try.

French astronaut Philippe Perrin floating in France's "Vomit Comet" -- the Airbus 300. These training planes are still the only way to change what you weigh -- short of a trip to space.

A machine that even slightly reduces gravity at spacecraft launch sites, agency officials believe, could save significant amounts of money.

"The fact that it had appeared in a credible scientific journal is what really caught our eye." Ron Koczor, assistant director for science and technology at the Space Science Laboratory.

The opportunity to try out such a machine is expected to come this May, when an Ohio company is scheduled to finish a prototype of the device for NASA.

Not that the space agency's officials themselves have high hopes.

"To say this is highly speculative is probably putting it mildly," acknowledged Ron Koczor, assistant director for science and technology at the Space Science Laboratory in NASA's Marshall Space Flight Center, Huntsville, Alabama.

Nonetheless, NASA awarded a $600,000 contract last year to Superconductive Components Inc. in Columbus, Ohio to build the device.

Critics say the notion of a "gravity shield" violates Einstein's fundamental laws of physics.

"The theory of gravity is fairly well established, and I don't see it reversing itself," said Francis Slakey, a professor of physics at Georgetown University. The NASA project is "wasted money that could have been used to do legitimate space science," he added.

Koczor portrayed that view as closed-minded.

Scientists such as Slakey "don't seem to be amenable to observing that maybe the laws [of physics] are incomplete," Koczor said.

Throughout history, new discoveries have rocked old assumptions, he pointed out. "People used to talk about laws of conservation of mass, conservation of energy. Then all of a sudden, Einstein comes along and says those are really parts of the same thing."

Einstein wrote that gravity can be considered a bending of space-time that inevitably occurs around massive objects such as planets and stars. That, the conventional view holds, means no mere machine or invention can make it go away; it is not a "force" that can be counteracted.

The conventional scientists aren't the only critics of the NASA project. The agency is also drawing fire from some of its former collaborators in the effort. To see why, it helps to start from the beginning.

In 1992, a Finnish scientist, Eugene Podkletnov, claimed to have built a device that produced a gravity-shielding effect.

It consisted of a hot, fast-spinning, 12-inch (30-centimeter) disk of a superconducting ceramic, levitating within a magnetic field. Objects above the disk, Podkletnov reported, showed a loss of weight of between about 0.5 percent and 2 percent.

In 1996, researchers at Marshall Space Flight Center decided to investigate the claims. "The fact that it had appeared in a credible scientific journal is what really caught our eye," Koczor said.

Actually, Podkletnov had withdrawn his most recent article from publication under unclear circumstances. But he and others had published research on antigravity phenomena in several peer-reviewed journals.

Koczor assembled a team that worked together with scientists at the nearby University of Alabama at Huntsville, to build a device partially simulating the one Podkletnov had used. But the researchers were unable to replicate Podkletnov's results, and the partnership fell apart last year with bad blood between the two sides.

The university's Larry Smalley, a physics professor, says NASA simply failed to assemble a competent team of scientists who could give the project a serious chance.

The events "amused me, stunned me and upset me," said Smalley, who said he was involved as an observer of the project at the time. "It made me feel like they wasted time, a lot of money and a really golden opportunity to do something."

Smalley said he remains skeptical that Koczor and NASA have the know-how to do anything meaningful with the project.

The main university professor involved with the project, Ning Li, has since left the school. She said she has founded a company in Huntsville that also will market a gravity-shield device.

Li said she dropped the NASA collaboration and decided to work independently after the agency "wasted" the project's money and resources.

Koczor said the project fell apart not because of incompetence, but because Li was primarily interested in proving her theories of why the "gravity shield" would work. That differed from NASA's goal of simply building a working device, he said.

"She wanted the research to focus on her particular theory. Our intent was simply to show there was a gravity effect, without saying 'theory A is right' or 'theory B is right,'" he explained.

Last year, NASA decided to try again, this time by contracting out the construction of the device. Superconductive Components is in communication with Podkletnov as they attempt to build it, Koczor said.

The project is on or ahead of schedule, said J.R. Gaines, vice president of Superconductive Components.

"The superconductor is built. The rest has been designed and fabrication is proceeding," Gaines said. However, he said, he can't offer an opinion on whether the device will actually work. The company's job is simply to build it to the assigned specifications.

"We don't necessarily have a technical opinion," he said, though "we would certainly love to see this work."

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