



Building an Anti-gravity Machine

The earth, moon, and stars all exert an invisible force called gravity. It is part of the glue that holds the universe together. If we could build a spaceship that could control the pull of earth's gravity, we could explore our solar system without rocket power, by tapping the gravitational forces of the sun, moon, and neighboring planets.

To understand how our star engine would work, let's name our spaceship after Newton's famous apple. When we turn on our engine, our *Apple* falls away from our earth as it is attracted by the gravitational pull of our moon.

To reach our destination we use the moon's gravity to launch our vehicle. When the moon's pull can no longer help us speed toward our destination, we use our engine to cancel the moon's gravity so that our spaceship, *Apple*, falls toward the gravitational pull of another celestial body.

As impossible as this engine sounds to most scientists, researchers at NASA's Marshall Manned Space Flight Center in Huntsville, Alabama, are performing the scientific research to determine the feasibility of building such a machine (see Fig. 1). In

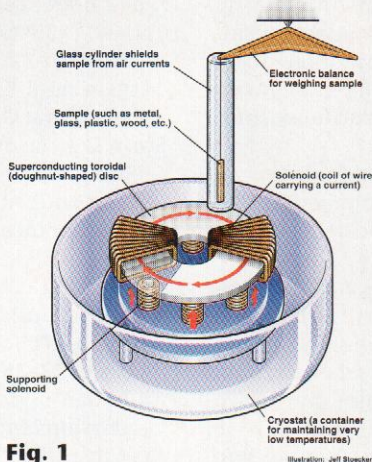


Fig. 1



Photo Credit—Dr. Ning Li

(Left to right) Whitt L. Brantley, NASA.MFSC, Dr. Ning Li, Senior Research Scientist, UAH, Tony A. Robertson, NASA.MSFC.

1989, Marshall Manned Space Flight Center scientific theorist Dr. Ning Li theorized that a superconductor rotating very fast, in a very strong magnetic field, could alter the force of gravity in its surrounding area.

In 1992, Dr. Eugene Podkletnov, while on leave from the Moscow Chemistry Science Research Center and working at Tampere University in Finland, performed an experiment paralleling Dr. Li's research. For four years, Dr. Podkletnov performed experiments where he suspended objects over a super-cooled superconductor disc. The disk

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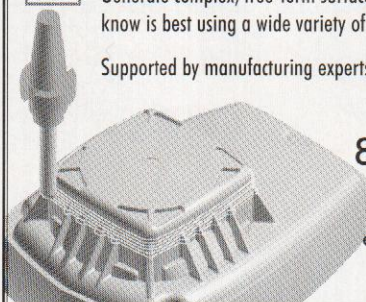
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spun at a very high speed while magnetically levitated over a very strong magnetic field. His data showed a variable but measurable loss of up to two percent of the weight of the suspended object. The suspended objects were made of materials that couldn't conduct electricity or be magnetized.

Many scientists believe that this machine conflicts with Newton's law of gravity and Einstein's theory of relativity. The Internet is full of interesting sites that your students can explore to learn more about current anti-gravity research. They can start their search at an Internet search engine and should visit <http://cspar.uah.edu/www/research/gravity.htmlx>.

Today, Dr. Li, the senior research scientist of the University of Alabama's gravitational physics research team, is helping NASA replicate Dr. Podkletnov's anti-gravity machine on a scale that could show very measurable results. The photo shows Dr. Li, Whitt L. Brantley, and Tony A. Robertson, next to the United States' largest high temperature superconducting disc. This disc is one half of an inch thick and it has a one foot diameter. The disc was completed in March of 1997. In January 1998, the anti-gravity machine was reported as 90 percent com-

plete. By the end of this century, we should learn if an anti-gravity star engine will be feasible during the 21st century.

This month's column marks the end of my third year as a columnist for *Tech Directions*. The topic for two of this year's columns came from written suggestions sent by subscribers to our magazine. The topic of this month's column also appears in Chapter 17 of Dennis Karwatska's and my new edition of *Introduction to Technology* (Glencoe/McGraw-Hill, summer 1998). The pace of technological change has already opened the door to many new column topics for our 1998-99 academic year. Have a great summer.

A Research Problem

In what way does the concept of this machine conflict with Newton's law of gravity and Einstein's theory of relativity? **TD**

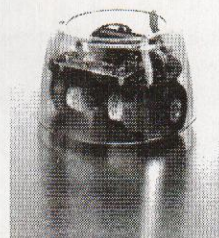
Alan J. Pierce is a professor, Department of Technology, Elizabeth City State University, Elizabeth City, NC 27909.



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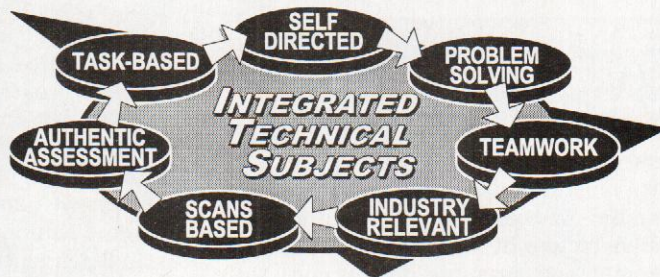
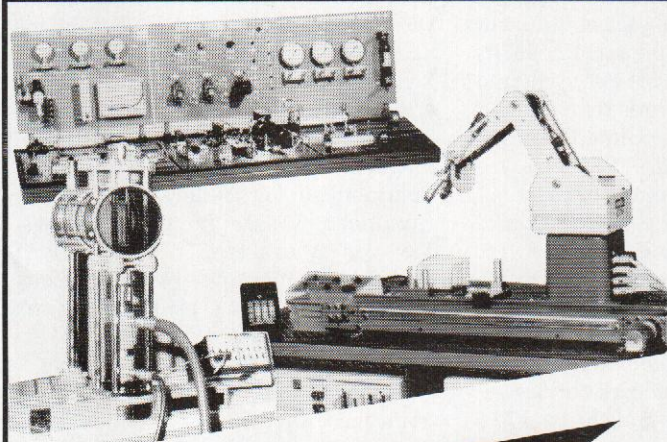
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