

Focusing on far-out ideas

Broomfield hosts
NASA conference on
advanced concepts

By Todd Neff
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BROOMFIELD — Webster Cash may have the least wild idea being presented at the annual NASA Institute for the Advanced Concepts conference happening Monday and today at the Omni Interlocken Resort in Broomfield.

Cash, a University of Colorado astronomy professor, is proposing a roughly \$1 billion space telescope designed to spot planets of distant stars. Its most basic configuration would include two spacecraft orbiting about a million miles from Earth.

One ship would unfold into a 100-foot-diameter "starshade." That flower-shaped umbrella would shield the eyes of a second spacecraft about 30,000 miles behind it. Its telescope could hunt for planets orbiting the star without all the distracting glare.

It takes some crazy company to make Cash's New Worlds Observer seem routine. The NASA Institute for Advanced Concepts delivers.

Take the proposal to harvest antimatter from space. Or the artificial neural membrane flapping wing. Or the magnetically

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inflated cable system for space applications. Such a system would use strong magnetic forces between superconducting cables to build everything from solar-electric power systems to massive telescopes.

Yet there is real substance behind these science-fiction ideas. Robert Cassanova, director of the Atlanta based institute that receives about \$4 million a year from NASA to generate ideas that could lead to missions between 10 years and 40 years down the road, said projects don't get a dime until they are peer-reviewed.

About 15 ideas a year are granted \$75,000 or less for a six-month study to flesh out the issues. Roughly five make it to a second phase, which grants \$400,000 for a two-year follow-on study. Roughly 10 percent make it into NASA's mission pipeline, Cassanova said.

Many of the scientists are first-rate. A man named James Powell is the brains behind the magnetically inflated cable system. He also invented the superconducting magnetic levitation train as a scientist in Brookhaven National Laboratory in the mid-1960s.

It probably sounded like science fiction at the time, but a "maglev" train based on Powell's design is running on an 11-mile test track in Yamanashi prefec-

ture, Japan. It has been clocked at faster than 330 mph. At lunch Monday, he said 50,000 passengers have ridden it

CU's Cash was one of a handful receiving the larger grants for follow-on studies this year.

The New Worlds Observer changed significantly during the initial study phase, he said. The team backed away from using a 300-yard-diameter shade with a "pinhole" in the center in favor of a smaller occultation shade, which cut both mission complexity and improved resolution. The tenfold size reduction and the need for no more than a 6-foot telescope means Cash's idea is possible with today's technology, he said.

It's not the first of Cash's projects to do well at the institute. His Micro-Arcsecond X-ray Imaging Mission, designed to take X-ray images of the event horizon of a black hole, is now in the NASA pipeline.

Between sessions Monday, Cash held a NASA Institute for Advanced Concepts mug given to project leaders.

"My goal is to get a whole dinner setting," Cash said.

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