

on NASA To Launch First-Ever Balloon-Borne Optical Interferometer

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Michael Lynch 9 days ago

Ricegy, you miss the point. Lithium-ion batteries are better for BEVs, but thinking they will advance at the rate of cellphone technology is nonsense. And you might have noticed that very few cars use those wonderful lithium-ion batteries. Torque etc. are nice, but few people base their purchasing decision on that. And you are performing blind extrapolation by thinking that the rapid cost decline on introduction will continue, now that the technology is maturing and economies of scale have been achieved.

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FOSTER 5 days ago

After about 6 weeks on it, we saw remarkable improvement. I went to my doctor to confirm if we are finally cured of chronic hepatitis B and my husband ALS (Lou Gehrig's disease) behold it was TRUE, me and my husband was totally cured of both diseases. So viewers my advise is if you have such disease or any other at all you can contact them via Email: perfecthealthherbalmedicine @ gmail .com or website www' perfecthealthherbal ' weebly ' com

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Tech

APR 23, 2016 @ 08:13 PM

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NASA To Launch First-Ever Balloon-Borne Optical Interferometer


Bruce Dorminey, CONTRIBUTOR

I cover over-the-horizon technology, aerospace and astronomy. [FULL BIO](#)

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allows astronomers to mimic the resolution and imaging capability of a much larger telescope.



will help astronomers understand how stars in the same stellar neighborhood affect each other and co-evolve.

For the first time ever, [NASA](#) will attempt to mimic the resolution of an 8-meter optical telescope via the light-combining art of interferometry --- all while using an instrument platform on a balloon-borne gondola undulating high in Earth's stratosphere.

The \$6 million high-altitude Balloon Experimental Twin Telescope for Infrared Interferometry (BETTII) will launch in early September from Fort Sumner, New Mexico on a 20-hour mission that will primarily test the technology some 120,000 feet up. If successful, it should open to the door to a plethora of optical and infrared astronomical missions using similar techniques at the tenuous edge of space. That is, above 99 percent of Earth's roiling atmosphere.



Observational astronomer at NASA Goddard Space Flight Center told me that such missions should be able to be done for a fraction of the cost of space-based missions.



A NASA stratospheric balloon preparing for launch. Credit: NASA/David J. Smith

Rinehart jokes that NASA's upcoming \$8.7 billion James Webb Space Telescope (JWST) --- due for launch in 2018 --- could have funded his team's BETTII balloon project with the change they found in the couch. Yet Rinehart predicts that BETTII will be able to use interferometry to observe at the same far-infrared wavelengths as the JWST; maybe even extending to wavelengths beyond the JWST's capability.

Interferometry is one of the most difficult and precise observing techniques in all of astronomy. That's because, simply put, interferometry uses the wavelike nature of electromagnetic (or photonic radiation) to constructively combine light from the same astronomical source (or target). This allows astronomers to mimic the resolution and imaging capability of a much larger telescope.





over 100 meters below the gondola and tend to swing back and forth on timescales of 15 to 20 seconds — but in being able to compensate for that motion,” said Rinehart.

Fortunately, he says, those large motions are fairly predictable and slow, so the team can compensate for them in their control system.

Rinehart says the first flight is technically a commissioning flight with hopefully a few observations of nearby bright star-forming regions.

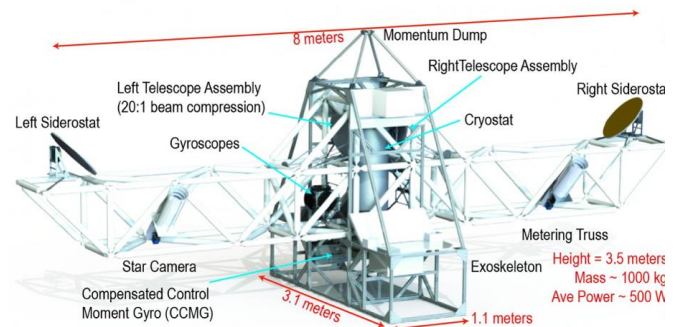
Once this new balloon-borne technology is proven, Rinehart says the team should be able to continue to fly this balloon and others like it to study the earliest phases of star formation inside our Milky Way galaxy. Specifically, BETTII will observe how warm dust is distributed in nearby active star-forming clusters. Later flights will delve into the physics of active galactic nuclei in nearby galaxies. Both will be achieved in the far-infrared spectrum at very high accuracies.

Although interferometry is now routinely used by ground-based observatories, it's not been achieved by optical telescopes in space. Thus, Rinehart and NASA sees these balloon flights as a means of paving the way for future interferometric space missions that would revolutionize many areas of astrophysics and astronomy; including the current quest to find earth-like planets around other sun-like stars.

BETTII's 8-meter long payload bench sits on a very stiff, steel and carbon-fiber truss that holds two elliptical flat mirrors (or



photons. They, in turn, funnel this light into four state-of-the-art far-infrared detectors.



BETTII is designed around the need for stability — such stability is critical for interferometers.

Credit: NASA Goddard Space Flight Center

How do they keep the 11.82 million cubic-foot balloon out of the line of sight of their celestial targets?

We just don't point in that direction, says Rinehart, but we can still observe anywhere in the Northern hemisphere during a 24-hour flight.

For science for the first flight, Rinehart says the big thing is that there are different theoretical models for how stars form in clusters, this mission Rinehart says will help astronomers understand how stars in the same stellar neighborhood affect each other and co-evolve. 

As for real time control of the balloon from the ground?

We can send commands to the instruments and see if the detectors are working, says Rinehart. But he notes they will record the celestial data on solid state storage disks for analysis once the balloon comes back down.



landing for two more nights in 2017 and 2018. That gives the team more than enough time to repair the instruments after the balloon makes its hard landing.

Eventually, he says he'd like to redesign part of BETTII to do a 30 day flight from New Mexico or a 150 day flight from Antarctica. In theory, says Rinehart, BETTII should fly for the next four or five years, if not longer.

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How First Book Is Harn Free Markets To Give A Quality Education



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First Book for Social ImpactVoice

When the final bell rings at Palmview Elementary in Pompano Beach, Florida, some of the students make one stop before heading home – the bushes outside of school. That is where they hide their backpacks for the night. Their living situations aren't stable. They don't always know where they will sleep that night. Because they have such limited belongings, they take this precaution to keep the few books they have safe.



©2015 Nathan Lindstrom

Volunteers from Wipro and staff members from First Book read and present books to second grade students at Ashford Elementary School Thursday morning November 12, 2015 in



More than 31 million kids – including [more than half of all U.S. public school children](#) – are growing up in low-income families, where books, school supplies and educational materials are scarce: at home, at school, and in their communities. With school funding [still below pre-recession levels in 23 states](#), the unfulfilled demand for books and resources in these low-income areas is accelerating. And many of these children don't have access even to basic items that will allow them to focus on learning, coming to school cold, hungry, and suffering from chronic stress.

Access to adequate resources is the single biggest contributor to educational inequity in the U.S. and as a result, almost 80 percent of kids from low-income families are not reading proficiently by the fourth grade. Once they fall behind, it is increasingly difficult for them to make up the lost ground.

First Book Impact - Davis County, Iowa



unemployment, health issues, and a variety of other societal concerns – as well as impeding our economic competitiveness as a nation. According to [McKinsey & Company](#), our failure to provide educational opportunities for children in need imposes the equivalent of a permanent economic recession on our nation.

In 1992, Kyle Zimmer, then a Washington, D.C.-based practicing attorney, launched First Book with two friends, not as a traditional nonprofit, but as 501(c) 3 nonprofit social enterprise with a distinct goal: to overcome the retail structure that drives the scarcity of educational materials in low-income areas and address inequity through a market-driven solution. After 25 years and 160 million books and resources distributed, First Book is transforming the playing field for educators and infusing classrooms and programs with the highest quality brand-new books and educational resources through a groundbreaking, award-winning model.

Here's how it works:

The First Book

Network aggregates demand through the largest and fastest-growing organization of programs and classrooms

exclusively serving children in need. The First Book Network currently numbers more than 325,000 educators – more than 25 percent of the estimated 1.3 million classrooms and programs serving kids in need in North



In 1992, Kyle Zimmer, then a Washington, D.C. based practicing attorney, launched First Book with two friends.



To reach this underserved market First Book has created two distribution engines. **The First Book Marketplace** (fbmarketplace.org and fbmpcanada.org) is an award-winning nonprofit e-commerce site that provides First Book's network of educators, librarians, providers, and others working in the lives of children in need with thousands of free and affordable high-quality brand-new books, educational resources, and basic needs items at highly affordable prices or for free. With over 6,000 items curated in direct response to member input, the First Book Marketplace addresses the barriers to education and attendance for kids in need from birth to age 18, including a large collection of relevant diverse and Spanish/bilingual books, school supplies, digital devices, food, clothing, and personal hygiene kits, as well as free teacher resources.

Originally launched in 1998, the **First Book National Book Bank** (fbbookbank.org) was the first – and remains the only – centralized distribution system for large-scale donations of children's books from publishers to schools and programs serving kids in need, recovering millions of unsold books from the retail system that would otherwise be destroyed. Educators pay only shipping and handling; the books are free. Today, the First Book National Book Bank distributes more than 10 million books annually.

In addition to providing educators with resources, First Book has compiled a knowledge bank of proprietary insights that aggregate and amplify the voice of those serving children in need. **First Book**



and investment.

First Book Impact - Smart from the Star...

The First Book model is working. In a poll of educators in the First Book Network, 87 percent report their children's increased interest in reading after receiving books from First Book; 88 percent report that resources from First Book helps close the achievement gap for the kids they serve. Importantly, 79 percent say First Book helps them be the best educator they can be.

First Book is dedicated to empowering these heroic educators who work in the lives of kids in need, as partners in a powerful, collaborative force for change.

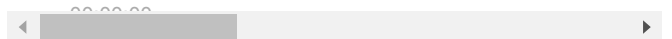
First Book is proud to partner with KPMG. KPMG is committed to education and lifelong learning as they are central to building strong communities and economic growth. Visit [KPMGVoice](#) to learn more.

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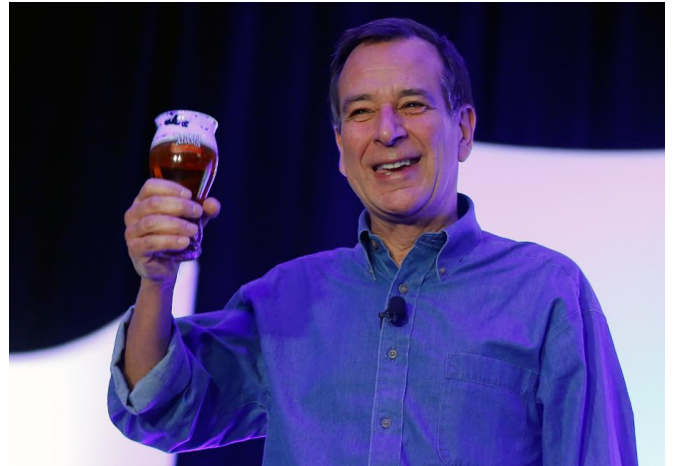
PODCAST: How Sam Altmann and Jim Koch Brewed A Billion Dollar Business

**Steven Bertoni**, FORBES STAFF [FULL BIO](#) 

You could call Jim Koch the father of the modern American beer movement. In 1984



favor to the watery U.S. beer market. His first beer, Sam Adams, was an instant hit--launching not only his beer empire, Boston Brewing Company, but an entire craft beer movement that has inspired professionals and hobbyists a like.



Jim Koch: Founder and Chairman of the Boston Beer Co. (Photo by Isaac Brekken/Getty Images)

On this episode of *The Forbes Interview* podcast, hear Koch discuss the ways in which he disrupted the beer industry and his predictions about the future of beer. Also, Koch shares some of the wildest beer recipes he has tried, plus, some professional tips on avoiding a hangover when you've had a few too many cold ones.



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