

# Re: The Biggest Experiments in Science

**Source:** <http://sci.tech-archive.net/Archive/sci.physics.research/2005-03/0704.html>

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Spiros wrote:

- >
- > *Hello,*
- >
- > *I am posting to this group as it is moderated and i shall hopefull*
- > *avoid cranks and glean some sensible and authoratative information.*
- >
- > *I work for a newly formed TV production company that is at the*
- > *development phase of a programme based on what currently costitute the*
- > *biggest experiments in science. "Biggest" in this sense relates not*
- > *only to scale but also to the the extent to which they are probing the*
- > *fundamentals of physics and existence.*
- >
- > *The ones that i have researched to date and which semm to fit this*
- > *framework are as follows:*
- >
- > *1) The Large Hadron Collider (LHC) at CERN*
- > *2) The ITER nuclear fusion project*
- > *3) The Cassini / Huygens project to determine if life could exist on*
- > *Titan*
- > *4) Laser Interferometer Wave Observatory (LIGO)*
- > *5) The Pierre Auger Observatory – high energy cosmic ray experiement*
- >
- > *I would appreciate feedback on this choice. Please bear in mind that*
- > *although bigger experiments are being proposed the above either all*
- > *exist, or will soon to as funding has been allocated.*
- >
- > *Also bear in mind that I work in TV and too many equations tend to*
- > *make me want to reach for yet another gin and tonic.*

<http://einstein.stanford.edu/>

Gravity Probe-B. Does the spinning Earth grab space?

The very biggest experiments can fit on a benchtop. If you had two lumps of stuff that fell differently you would kill General Relativity (that assumes everything local falls identically in vacuum – the Equivalence Principle). You might also take down the Standard Model and quantum mechanics. Folks have wondered if different chemical

compositions fall differently for 400+ years,

<http://www.mazepath.com/uncleal/eotvos.htm#b22>

historical list

The apparatus has become wonderfully clever and sensitive – the size of your fist shielded inside a water heater,

<http://www.npl.washington.edu/eotwash/>

Eric Adelberger and Blayne Heckel – masters of the art

<http://www.physics.uci.edu/gravity/>

Riley Newman – cryogenic Eotvos balance in a missile bunker

<http://www.physics.indiana.edu/~kostelec/mov.html>

Alan Kostelecky

Jun Luo at the Department of Physics, Huazhong University of Science and Technology, Wuhan PR China is breaking new ground. He is comparing test masses of \*identical\* chemical composition but opposite atomic lattice handedness. Does a left hand fall identically to a right hand? The first experiment had a modestly interesting outcome. Alas, no Web page,

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<http://www.mazepath.com/uncleal/>

(Toxic URL! Unsafe for children and most mammals)

<http://www.mazepath.com/uncleal/az.pdf>