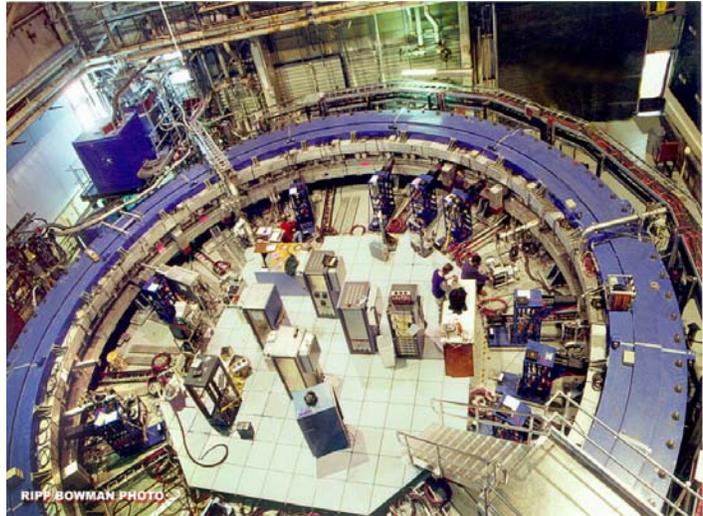


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Physicists Announce Possible Violation of the Standard Model of Particle Physics

- Scientists from Brookhaven National Laboratory and other institutions in the U.S., Russia, Japan, and Germany made national and international news when they announced this month findings that may confront the so-called Standard Model of Particle Physics.
- The Standard Model is an overall theory of particle physics that has withstood rigorous experimental challenge for 30 years.
- "There appears to be a significant difference between our experimental value and the theoretical value from the Standard Model," says Yale physicist Vernon Hughes, who initiated the new measurement and is co-spokesperson for the experiment.
- Scientists doing research at an experiment dubbed the muon g-2 have been collecting data since 1997. Brookhaven physicist Gerry Bunce, said, "We are now 99 percent sure that the present Standard Model calculations cannot describe our data."
- While further study is needed, Boston University physicist Lee Roberts said, "This work could open up a whole new world of exploration for physicists interested in new theories, such as supersymmetry, which extend the Standard Model."



Muon g-2 Experiment

Brookhaven Work Could Lead to Smaller, Faster Electronic Circuits

- In the world of electronic circuits, smaller is better: Small circuits, such as those used in computers, run faster and process more data. One key to developing smaller circuits is making tiny wires.
- Lab and Stanford University scientists think they have developed a good candidate, molecular wires millions smaller in diameter than a human hair.
- These "nanowires," so called because they have dimensions on the order of a nanometer (a billionth of a meter), have high rates of electron transfer with very low resistance.
- The wires are not yet perfected because the resistance is not as low as it should be according to certain theoretical expectations. But this drawback could even turn into a benefit if the scientists can figure out what the controlling factor is and how to use it.
- Laboratory Link will report on further developments as they occur.

(over)

Link Found Between Dopamine and Obesity

- BNL scientists have done extensive research showing that dopamine plays an important role in drug addiction. They've found that addictive drugs increase the level of dopamine in the brain and that addicts have fewer dopamine receptors than normal subjects.
- It is suspected that because eating, like the use of addictive drugs, is a highly reinforcing behavior, obese people might have abnormalities in brain dopamine activity as well.
- To test this hypothesis, the number of dopamine receptors in severely obese individuals was measured and compared to the number in normal control subjects. The obese individuals were found to have fewer receptors for dopamine.
- "The results from this study suggest that strategies aimed at improving dopamine function might be beneficial in the treatment of obese individuals," said physician Gene-Jack Wang, lead scientist on the study.
- Researchers note that they cannot conclude whether the brain changes they detected are a consequence or a cause of obesity. They do suggest that regulating dopamine in obese people might help reduce their tendency to overeat.



BNL researchers Gene-Jack Wang and Nora Volkow

New Research on Ritalin

- Ritalin has been used for more than 40 years as a successful treatment for millions of American children with Attention Deficit Hyperactivity Disorder.
- Using a technique called positron emission tomography, or PET, researchers at Brookhaven's Center for Imaging and Neurosciences studied dopamine levels in male subjects. The findings indicate that Ritalin significantly increases levels of dopamine in the brain, thereby stimulating attention and motivational circuits that enhance one's ability to focus and complete tasks.
- "We now know that by increasing the levels of extracellular dopamine, you can activate these motivational circuits and make the tasks that children are performing seem much more exciting," said Nora Volkow, head of the research team. "By raising that level of interest, you can significantly increase the ability of the child to focus on the task."

Upcoming Concerts Open to the Public

- *The Two Muses, Duo, March 21, Noon, Berkner Hall:* Remarkable music from the Baroque, Classical and Romantic eras composed for the seldom-heard combination of flute and guitar. Free.
- *Gelev-Lando-Borisy Trio, April 11, Noon, Berkner Hall:* Vesco Gellax (violin), Vadim Lando (clarinet), and Pippa Borisy (piano) return to Berkner Hall by popular request. Free.