Astronomy and Physics News around the World
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Reported News for this Week:

1. Loss of Planetary Tilt Could Doom Alien Life
2. World's smallest memory bit stores data using just 12 atoms
3. Electron negativity cut in half by supercomputer
4. Planets around stars are the rule rather than the exception
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7. Onset of electrical resistance has been seen in real time
8. Research team predicts the next big thing in the world of particle physics: Supersymmetry

Loss of Planetary Tilt Could Doom Alien Life

Moffett Field CA (SPX) - Although winter now grips much of the Northern Hemisphere, those who dislike the cold weather can rest assured that warmer months shall return. This familiar pattern of spring, summer, fall and winter does more than merely provide variety, however. The fact that life can exist at all on Earth is closely tied to seasonality, which is a sign of global temperature moderation. The driver ... more

World's smallest memory bit stores data using just 12 atoms
Researchers at IBM have stored and retrieved digital data from an array of just 12 atoms. The storage unit was made by painstakingly arranging two rows of six iron atoms on a surface of copper nitride. Such closeness is possible because the cluster of atoms is antiferromagnetic — a rare quality in which each atom in the array has an opposed magnetic orientation. The work is reported in Science. MORE

Electron negativity cut in half by supercomputer

Durham, NC (SPX) - While physicists at the Large Hadron Collider smash together thousands of protons and other particles to see what matter is made of, they’re never going to hurl electrons at each other. No matter how high the energy, the little negative particles won’t break apart. But that doesn’t mean they are indestructible. Using several massive supercomputers, a team of physicists has split a simulate ... more

Planets around stars are the rule rather than the exception
Livermore, CA (SPX) - There are more exoplanets further away from their parent stars than originally thought, according to new astrophysics research. In a new paper appearing in the Jan. 12 edition of the journal, Nature, astrophysicist Kem Cook as part of an international collaboration, analyzed microlensing data that bridges the gap between a recent finding of planets further away from their parent stars and ... more

'Nano-ear' from optically trapped gold nanoparticle

Physicists in Germany have developed the first "nano-ear" capable of detecting sound on microscopic length scales with an estimated sensitivity that is six orders of magnitude below the threshold of human hearing. Described in Physical Review Letters, the device is based on trapping a gold nano-particle in an optical tweezer. As sound waves displace the trapped particle from its equilibrium position, the sound frequency can be calculated from the magnitude of the displacement. The nano-ear can detect vibrations at a power level several orders of magnitude lower than the threshold of a human hearing. MORE

Astronomers Determine Color of the Milky Way Galaxy
A team of University of Pittsburgh astronomers has announced the most accurate determination yet of the color of the (aptly named) Milky Way Galaxy: "a very pure white, almost mirroring a fresh spring snowfall." Jeffrey Newman, Pitt professor of physics and astronomy, and Timothy Licquia, a PhD student in physics at Pitt, announced the findings during a presentation at the 219th American Astrono ... more

Onset of electrical resistance has been seen in real time

Researchers at the Max-Born-Institute, Berlin, Germany, have observed the extremely fast onset of electrical resistance in a semiconductor by following electron motions in real time. Using extremely short bursts of terahertz light the researchers were able to generate free electrons in a crystal of gallium arsenide and then follow them on their free path before colliding with lattice atoms. The result, published in Physical Review Letters, gives a direct observation of electric friction in materials. It turns out that after their ballistic paths, the electrons mostly collide with "holes," or a missing electron in the valence band of the semiconductor, which can itself be viewed as a positively charged particle with a mass six times higher than the electron. MORE

Research team predicts the next big thing in the world of particle physics: Supersymmetry

Several particle theorists are predicting the discovery of the Higgs boson will lead to supersymmetry or SUSY — an extension of the standard model of particle physics (Video: Beyond the Higgs: Supersymmetry). SUSY predicts new matter states or super partners for each matter particle already accounted for in the standard model. Howard Baer and his colleagues were the first in the world to show what SUSY matter might look like at colliding beam experiments. Baer has published books and papers on SUSY; most recently, a paper on implications of recent evidence of the Higgs boson at the CERN Large Hadron Collider for SUSY theory. MORE