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NEWS

Awards & Honors

Michael E. Fisher, Professor, was honored with the distinguished title of Ph.D. *honoris causa* by the Weizmann Institute of Science. This is in recognition of his outstanding contributions to science or society. He will be presented this honor at the 61st Annual General Meeting of the Institute's International Board.

John Silberholz (CS & Math) is a 2009 Goldwater Scholar recipient. The Barry M. Goldwater Scholarship and Excellence in Education Program was established by Congress in 1986. The purpose of the Foundation is to provide a continuing source of highly qualified scientists, mathematicians, and engineers by awarding scholarships to college students who intend to pursue careers in these fields. He is advised by Assistant Professor **Manuel Tiglio** (Physics and CSCAMM).

In the News

Tom Cohen, Professor, was quoted in an article that appeared in the Metro section of the *Washington Post*, on March 23. The article was about the Math-Science Magnet at Montgomery Blair High School in Montgomery County.

A publication by **Matt Bobrowsky**, Manager of Physics Lecture Demonstration, in the February issues of *Astronomy & Astrophysics*: received much notice, including the Science Daily article entitled "Galactic Dust Bunnies Found to Contain Carbon After All." The article can be found [here](#).

Jordan Goodman, Professor, was quoted in Science News, February 28. The article, on the surplus of particles from space invading Earth's atmosphere, can be found [here](#).

O.W. Greenberg, Professor, was featured on Ireland's Lyric FM Radio, celebrating the 50th anniversary of the Fulbright Scholar Prize. The program can be heard [here](#).



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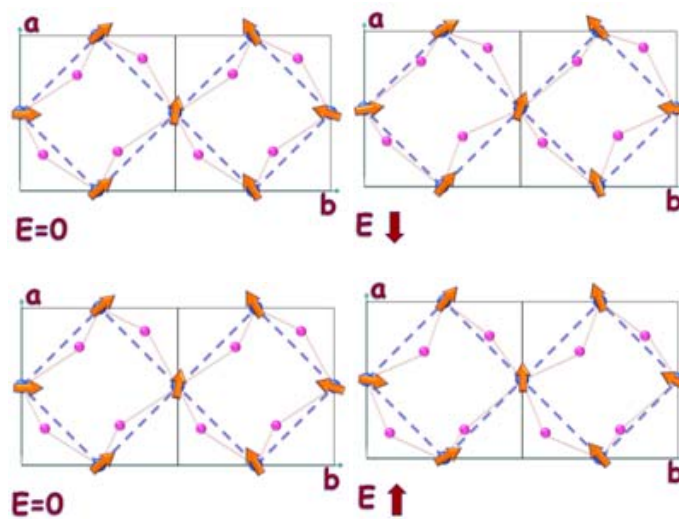
RESEARCH SPOTLIGHT

Origin of Electromagnons in Multiferroics ¹

By: Dennis Drew, Research Professor

The following is the summary of a group paper recently accepted to be published in *Physical Review Letters*:

In most materials electricity and magnetism do not strongly interact so that mixed magneto-electric devices are not yet a part of the electronics industry. Similarly, the electromagnetic response (i.e., to light) is generally separate – the magnetic field of light can excite magnetic resonances and light's electric field can excite lattice vibrations. In multiferroic materials, where magnetism and ferroelectricity coexist, it is possible to excite mixed spin and lattice vibrations with electromagnetic waves. These excitations are called electromagnons. Based on a study of the absorption spectrum of the multiferroic compound TbMnO_3 as a function of magnetic field, temperature, and polarization of light we propose a theory for the origin of these electromagnon excitations in the whole multiferroic family RMnO_3 . Interestingly, we find that the mechanism responsible for electromagnons is different from the one that couples static magnetism and ferroelectricity. Our model also explains the appearance of ferroelectricity in another family of multiferroic materials with collinear magnetic structures - the so called E-phase. Our results show how to strongly couple spin and lattice excitations, and that this mechanism can exist in non-multiferroic materials. Therefore, in principle, this effect could be useful for spintronic applications that take advantage of this coupling even at room temperature, something that is not possible in the current families of multiferroic materials where these effects exist only at cryogenic temperatures.



1. "The origin of electromagnon excitations in multiferroic RMnO_3 " R. Valdes Aguilar, M. Mostovoy, A. B. Sushkov, C. L. Zhang, Y. J. Choi, S-W. Cheong, and H. D. Drew, *Physical Review Letters*, to be published.



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ALUMNI SPOTLIGHT

William Joseph Thompson Will Receive the 2009 Physics Distinguished Postdoctoral Award

The 2009 Physics Distinguished Alumni /Postdoctoral Award will be presented to Dr. William Joseph Thompson, co-founder and Executive Vice President of Circadiant Systems, Incorporated. Dr. Thompson was a Postdoctoral Research Assistant with Professor Sarah Eno from 1993 to 1999, working on the Dzero experiment at Fermi National Accelerator Laboratory. After leaving Maryland, he was offered a job at Lucent Corporation. They had heard of his expertise in fiber optics, and asked him to take over their 10 Gigabit R &D effort. This was quite an impressive offer- it's not every day that a physicist doing fundamental research is offered a \$1M laboratory in a major technology company. Dr. Thompson worked for Lucent for a few years, after which he co-founded his own company: [Circadiant Systems, Incorporated](#).

Circadiant Systems, Inc. provides optical test systems to optical component developers, network equipment manufacturers, and telecom service providers. Dr. Thompson is responsible for operations, engineering and quality assurance. He holds a Ph.D. in physics from Stony Brook, New York and has published several papers and patents in optics and physical processes.

The Physics Distinguished Alumni/Postdoctoral Award is given annually to honor a former student's professional success. The award will be presented on April 24th at the [21st Annual CMPS Academic Festival](#). The festival recognizes the outstanding performance of our alumni, students, faculty and staff.