

## **Largest physics meeting of the year: March 20-25, 2011, Dallas, Texas**

EurekAlert

The March Meeting of the American Physical Society (APS) –the largest physics meeting of the year - will take place from March 20 to 25 at the Dallas Convention Center. Approximately 7000 papers will be delivered in the course of the meeting. Journalists are invited to attend the meeting free of charge.

Traditionally the March APS meeting has been a major venue for presenting the scientific principles and techniques behind many of the high-tech devices of today and tomorrow. The large topic areas at the meeting are condensed matter physics, computer physics, biological physics, chemical physics, polymers, and fluids. Specific hot topic areas include graphene, topological insulators--materials that are insulators on the inside but exceptional conductors on the outside--quantum computing, smart materials, bio-engineering, energy efficiency, spintronics, microfluidics, and ultracold atoms.

Not all the presentations at the meeting are highly technical. Session H8 features talks on the physics of rodeo, singing Tesla coils, and the science behind barbecue. Monday, March 21 at 7:45 pm, Vincent Crespi will talk about the attempt to broaden public understanding and appreciation of science, especially nanoscience, through exhibits at museums.

### **MEETING HIGHLIGHTS**

#### **BEAM ME BACKWARDS, SCOTTY**

Rather than send airplanes into the upper atmosphere to detect pollutants or biological weapons, researchers at Texas A&M University, with collaborators from Princeton University and the University of Arizona, have developed a backwards-emitting laser-like beam that could be developed to identify gases and particles in the sky. To create the backwards-emitting beam, the team first shoots laser pulses of different speeds to excite air molecules. The two pulses join to generate a new laser-like pulse, called a backwards-emitting beam, that travels back towards the source. This beam could potentially be exploited for new types of remote sensing and may lead to a novel way to measure components of the atmosphere. Because the researchers are able to control where the laser-like beam is created, they could examine the air at nearly any altitude, searching for anthrax spores or pollution particles miles above the Earth without ever having to leave the ground.

W45.00014 - <http://meetings.aps.org/Meeting/MAR11/Event/143410> [1]

W45.00013 - <http://meetings.aps.org/Meeting/MAR11/Event/143409> [2]

#### **THE TINIEST ANTENNA**

Researchers at the Institute of Photonics Sciences (ICFO) in Barcelona who produced the world's smallest antennas in August of 2010 have now expanded their collection to include a palette of tiny antennas that can transmit photons in various patterns. The antennas operate much like the old fashioned TV antennas that once sprouted from most rooftops, except that they are millions of times smaller and are constructed of nanoscopic rods that direct the light emitted from a quantum dot. Niek van Hulst of ICFO-Barcelona will describe recent advances in nanoantenna development, and will discuss applications ranging from the detection of signals emitted by biological molecules to the construction of efficient connections between quantum dots for quantum computers and highly secure cryptographic systems. B32.00004 - <http://meetings.aps.org/Meeting/MAR11/Event/137285> [3]

### **X-RAY VISION FOR ARCHAEOLOGISTS**

Archaeologists studying text carved into stone tablets or painted on pottery struggle to read the ancient markings when they have been eroded or obscured over time. To help them out, a trio of physicists at Cornell University created a way to expose traces of ancient markings, using a technique called X-ray fluorescence (XRF) imaging. XRF imaging reveals chemical traces left behind by tools and paints that are invisible to the naked eye. High resolution images can be created from XRF scans in minutes to hours. After starting with ancient Greek and Roman objects, the physicists turned recently to imaging Mayan artifacts. On one piece of Mayan pottery, black paint was partially obscured by a layer of black crud. Using XRF imaging, the researchers revealed the original pattern of paint by identifying and isolating chemicals specific to the paint. The team can do the same to reveal one layer of paint underneath another. Unlike some other techniques, no special sample environment is required for XRF imaging and objects of different sizes, ranging from a small chip to an eight-foot-tall stone tablet, can be imaged. XRF imaging is also non-destructive because it does not require a sample to be removed from an artifact. The technique allows archaeologists to see what the eye cannot, opening the door to future breakthroughs in understanding ancient civilizations. W21.00013 - <http://meetings.aps.org/Meeting/MAR11/Event/143057> [4]

### **NANO-SCALE VIEW COULD AID IN EARLY CANCER DETECTION**

A recently-developed technique to analyze swabbed samples of cells could provide early lung, colon, ovarian, pancreatic, and esophageal cancer detection. Vadim Backman of Northwestern University will give a talk about an optical technique, called partial wave spectroscopic (PWS) microscopy, that can reveal the cancerous breakdown of cells at the nano-scale level. By zooming in very close, PWS can detect the signature of cancer in the disarray of a single cell's nucleus. Like detecting a home's risk of earthquake damage by spying cracks in the brickwork, PWS can detect the onset of cancer from the disorder at the heart of a cell, which occurs long before other outward signs of cancer develop. A recent small-scale trial showed promise for early detection using PWS when lung cancer was detected in cheek swab samples. The method is currently in the clinical research phase. D21.00001 - <http://meetings.aps.org/Meeting/MAR11/Event/138005> [5]

### **HOMELAND SPECTROSCOPY**

Explosives in airports can be hard to detect but two new creations could make detection easier and airports safer. Abhishek Kumar and colleagues at the University of Massachusetts Lowell created a new fluorescent polymer developed to respond to trace elements of explosives in the air. A thin film of the polymer solution is smeared on a flat surface, like a glass slide, and exposed to the air being tested. By shining a light on the sample and measuring the amount of fluorescent light emitted, it's possible to quickly determine whether the film has been exposed to even a tiny amount of a chemical bound to the polymer. The creators are currently working to produce a small commercial device with multiple sensors whose redundancy could help reduce false-positives. The polymer can be mass-manufactured and distributed broadly at a low cost, bringing enhanced explosive detection to airports around the world. Srikanth Singamaneni and colleagues at Washington University developed flexible and durable swabs that will enable security officials to use a more sensitive form of spectroscopy, called surface enhanced Raman scattering, to search for traces of explosives in cars, suitcases, and other containers.

Z39.00013 - <http://meetings.aps.org/Meeting/MAR11/Event/144612> [6]

V32.00011 - <http://meetings.aps.org/Meeting/MAR11/Event/142663> [7]

### NEW TAKES ON PHYSICS AND EDUCATION

Comic books as educational tools? Rebecca Thompson, of the American Physical Society's Outreach Department, will talk about the use of comic books to teach physics to children. She'll discuss three APS comic books including the laser-related adventures of a superhero called Spectra and a book about Nikola Tesla's professional battle with Thomas Edison. (A14.00005, <http://meetings.aps.org/Meeting/MAR11/Event/136505>). John Fanchi from Texas Christian University will present a new undergraduate program intended to motivate students to work on solutions to our energy problems by becoming the next generation of energy professionals. (A14.00002, <http://meetings.aps.org/Meeting/MAR11/Event/136502> [8]). J. Pedro Ochoa, from the Lawrence Berkeley National Laboratory, will give practical advice on overcoming cultural barriers, speaking from his own experience transitioning from Mexico to the United States and to China. (Y8.00002, <http://meetings.aps.org/Meeting/MAR11/Event/144003> [9]). Other topics in the session include a look at the nature of discovery and the pleasure of finding things out, (Joshua Borchardt, North Dakota State University, A14.00001, <http://meetings.aps.org/Meeting/MAR11/Event/136501> [10]), and an overview of a program at the University of Texas College of Natural Sciences that brings freshman into research laboratories, leading to improved retention, higher GPAs and increased graduate school enrollment. (Rosa Elia Cardenas, L14.00011, <http://meetings.aps.org/Meeting/MAR11/Event/139874> [11]).

### SPIDER-MAN FOR REAL

Spider webs are sticky stuff. Understanding how they trap and retain prey even in wet environments could lead to development of more durable adhesives. A spider-inspired, water-resistant adhesive could be used for anything from tougher

bandages to underwater sealants. Vasav Sahni and colleagues at the University of Akron have investigated spider adhesive to reveal how the polymer material is both strong and flexible. The researchers met in the dark of the night when their lab was empty and no vibrations from coworkers' movement could disturb their work. They measured the force needed to stretch tiny glue droplets, each a third the width of a human hair, from the delicate silk fibers of a spider web. The late night experiments were vital because even a mistimed breath could have ruined their efforts. After gaining an understanding of how the spider glue functions, the team was successful in mimicking the glue in the lab.

A44.00009 - <http://meetings.aps.org/Meeting/MAR11/Event/136897> [12]

### **NEW GRAPHENE DEVICES AND NOBEL PRIZE LECTURE**

Graphene was celebrated last year with the award of the Nobel Prize for physics to Andre Geim and Konstantin Novoselov a scant six years after their discovery of the ultra-thin, strong, and electronically versatile material. Many research groups have now made progress towards practical graphene-based devices that could eventually make conventional silicon electronics obsolete. Among the recently-developed graphene devices being announced in session B37 at the 2011 March Meeting are radio frequency transistors (B37.00001,

<http://meetings.aps.org/Meeting/MAR11/Event/137358> [13]), logic inverters (B37.4,

<http://meetings.aps.org/Meeting/MAR11/Event/137361> [14]), and transparent and

flexible field emission devices (B37.00010,

<http://meetings.aps.org/Meeting/MAR11/Event/137367> [15]), to name just a few.

Also in session B37, Walt de Heer of the Georgia Institute of Technology will present an invited talk offering a broad overview of graphene based electronics (B37.00007, <http://meetings.aps.org/Meeting/MAR11/Event/137364> [16]). In addition, 2010 Nobel Laureate Novoselov will be the featured speaker at a special Nobel Prize Session on Wednesday, March 23 at 5:45 PM

(<http://meetings.aps.org/Meeting/MAR11/Event/144916> [17]).

### **CARBON NANOTUBE "RUBBER" WITHSTANDS RECORD TEMPERATURE RANGE**

A new viscoelastic (or rubber-like) material built entirely of carbon nanotubes retains its properties over a record temperature range, from -196 C to 1000 C. (By comparison, silicone rubber only remains stable from -55 C to 300 C.) The key to the material's extraordinary resilience comes from relying on a network of carbon nanotubes linked into a random mesh, rather than the polymer molecules that make up most conventional elastics. In order to test the carbon nanotube viscoelasticity, the researchers who developed the material at the Technology Research Association for Single Wall Carbon Nanotubes (TASC) and National Institute of Advanced Industrial Science and Technology (AIST) in Japan conducted impact tests that bombarded samples with steel spheres while the material was at various temperature extremes. The resulting indentations were identical whether the material had been dipped in liquid nitrogen or blasted with a butane torch. Although it's too early to say for sure what sorts of applications could benefit from such a temperature insensitive viscoelasticity, the researchers who developed it speculate that it may come in handy for craft headed to interstellar space, inside

high-temperature furnaces, or perhaps as high performance parts in airplanes and other vehicles. Ming Xu of TASC & AIST will discuss the likely mechanisms behind the viscoelastic's record-setting temperature range as well as describing new methods the group has developed for creating softer, more elastic and stronger versions of the material.

B28.00007 - <http://meetings.aps.org/Meeting/MAR11/Event/137248> [18]

### **NANOTUBE FABRIC TOUGHER THAN KEVLAR**

Yarns and twines made of carbon nanotubes could lead to the toughest textiles ever made, provided methods to spin them into substantial lengths are successful. Tobin Filleter and colleagues at Northwestern University have developed methods to make nanotube twine tougher still by exposing it to electron beams that cause the fibers to form microscopic mechanical bonds known as crosslinks. The crosslinked fibers are as much as ten times stiffer and stronger than non-irradiated fibers. In the same session, Ray Baughman of the University of Texas at Dallas will consider larger-scale issues of forming carbon nanotube yarns into long enough segments to be woven into fabrics for use in superconductors, Li-ion battery materials, and fuel cells, among other applications.

A28.00005 -

<http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=144813>

[19]

A28.00004 - <http://meetings.aps.org/Meeting/MAR11/Event/136702> [20]

### **SUPERCONDUCTIVITY CENTENNIAL**

The year 2011 marks a century since the discovery of superconductivity. Session B3 will be devoted to the history of the discovery, including notable superconductivity milestones. Session Q3 looks at research opportunities in superconductivity. Dozens of sessions will cover reports of the latest research findings. The Industrial Physics Forum, a meeting-within-the-meeting sponsored jointly by the American Physical Society and the American Institute of Physics, will look at the latest industrial applications of superconductivity (sessions 1A, 1B, A5). Topics in these sessions include the advent of a comprehensive theory of low-temperature superconductivity, the latest superconductivity applications in the areas of medical imaging, the electric grid, electronics, astrophysical detectors, and sensors for tiny magnetic fields.

B3 -

<http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145212>

[21]

Q3 -

<http://meetings.aps.org/Meeting/MAR11/sessionindex2/?SessionEventID=145542>

[22]

1A -

<http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145321>

[23]

1B -

<http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145322>

[24]

A5 -

<http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145323>

[25]

## **MODELING THE DECLINE OF RELIGION**

The decline of religion in some modern cultures is a trend reflected in census data. About half of all people in the Netherlands, for instance, identify themselves as having no religious affiliation. Now at Northwestern University and the University of Arizona, researchers have developed a simple mathematical model that accurately describes what is going on. Richard Wiener of the University of Arizona will describe how he and his collaborators used historical census data from a number of countries to track the growth of religious non-affiliation and applied techniques from physics research to analyze the competition for adherents between religious and irreligious segments of modern secular societies. Their model predicts that in many modern secular societies, religions will continue to lose members and be driven toward extinction. The model is also applicable to a variety of competitive social systems, the researchers argue, like smokers vs. non-smokers, vegetarians vs. meat-eaters, obese vs. non-obese people, and Mac vs. PC users.

B14.00005 - <http://meetings.aps.org/Meeting/MAR11/Event/137047> [26]

## **FRONTIERS IN PHYSICS**

As part of the Industrial Physics Forum at the 2011 March Meeting, the Frontiers in Physics session D5 will feature five talks on some of the most dynamic topics in physics. Linda Young of Argonne National Laboratory will speak about the Linac Coherent Light Source, the world's first hard X-ray laser, based at SLAC National Accelerator Laboratory. Some of the laboratory's first experimental results are about what happens when an atom's inner electrons are blasted out with X-rays. National Institute of Standards and Technology (NIST) scientist Joseph Stoscio will describe scanning tunneling microscopes (STMs) that operate at low temperatures and high magnetic fields, making them perfect for exploring quantum mechanical phenomena and conduction in graphene. Stanford physicist Shoucheng Zhang will describe potential applications for topological insulators, materials in which electrons flow easily on their surfaces but not through their interiors. Barbara Jacak, a physicist at Stony Brook University and a leader of a detector group at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory will report on the experiment that created the hottest fireballs ever seen on Earth by smashing gold ions together. The coldest place on Earth, arguably, is the center of Deborah Jin's atom trap at the University of Colorado in Boulder. She will look at the strange chemistry that occurs among atoms at very cold temperatures.

D5 -

<http://meetings.aps.org/Meeting/MAR11/sessionindex2/?SessionEventID=145325>

[27]

## **NEW METHODS FOR READING GENES**

A faster, cheaper, and more accurate alternative for analyzing DNA may soon be on the market. Shuo Huang and colleagues at Arizona State University have developed

a new approach for determining the components that make up individual molecules of DNA using a scanning tunneling microscope to probe along a piece of DNA and read the electronic signature of each of the bases in a DNA string. The researchers predict that it will eventually be a faster, cheaper, and more accurate alternative to existing methods for sequencing single pieces of DNA, though it is currently limited to reading pieces no longer than 10 bases long. To be commercially viable, the researchers believe that the technique should be able to read DNA segments made up of 1,000 bases or more. They are currently developing a version of the device that they hope will lead to the next generation of rapid and cheap DNA analysis.

V40.00002 - <http://meetings.aps.org/Meeting/MAR11/Event/142744> [28]

### TOPOLOGICAL INSULATORS

Topological insulators, materials that allow charge to flow easily on their surfaces but not their interiors, are the one of the fastest-growing subjects of physics research. The insulators are expected to be a boon for the development of spintronics circuitry that exploits the spin of electrons as well as their electrical charge. Topological insulators are featured in many sessions including D2, H2, Y2, A35, B35, D35, H35, J35, P35, and others. Some specific new results: Nuh Gedik and his colleagues at MIT will report (papers J35.00008, J35.00010, J35.00012) on the use of light to probe the electron currents, some of them on the surface of the material and some of them perhaps traveling through a buried structure beneath the surface. Kesong Yang (X32.00005) will announce the discovery of some 40 new topological insulating materials.

X32.00005 - <http://meetings.aps.org/Meeting/MAR11/Event/143784> [29]

J35 -

<http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=139300>

[30]

### HIGH-PURITY GERMANIUM CRYSTALS FOR DARK MATTER EXPERIMENTS

More than 80% of the matter in the universe is a mystery to science. We call it dark matter, and though we know it exists, we don't know what it is and we have never been able to detect it directly. A number of new experiments to detect dark matter are underway in Japan, Europe, Canada, and the United States. These experiments are being conducted deep underground, hidden from the interfering radiation produced by cosmic ray showers. Dongming Mei from the University of South Dakota will describe the latest results in preparation of high-purity germanium crystals for the proposed experiments for the Deep Underground Science and Engineering Laboratory (DUSEL). The laboratory is being constructed more than a mile underground in the former Homestake gold mine in Lead, S.D. Mei and his colleagues are studying how to grow large crystals of high-purity germanium up to a few kg in weight in the underground environment at DUSEL in order to detect dark matter and to study neutrinos. Once in place about two years from now, the crystals will be used to detect particles of dark matter, as well as other rare and exotic phenomena. Mei will also present techniques for identifying impurity levels that can degrade the crystals' performance.

A11.00012 - <http://meetings.aps.org/Meeting/MAR11/Event/136468> [31]

## **SELF-PROPELLED MINI MACHINES**

Rachita Sharma and colleagues at North Carolina State University have developed a technique for remotely steering millimeter-sized machines that are self-propelling when placed in a fluctuating electric field. Like miniature boats, the tiny machines float on water and pump microscopic amounts of fluid across their surface when the electric field is turned on, which propels them forward. Changing the field can make the minuscule machines turn or reverse course. The group is also working on self-propelled particles based on living cells that rely on glucose for power. Such devices may one day precisely deliver drugs in the body, diagnose medical conditions, and detect toxins in the environment, among other applications. Videos of the devices in action are available at

<https://picasaweb.google.com/rachitasharma05/DiodeRotation#>

Y9.00003 - <http://meetings.aps.org/Meeting/MAR11/Event/144010> [32]

## **PROTEIN FOLDING SPEED LIMIT**

One of the most fundamental problems in modern biophysics is that of protein folding how the genetically-defined sequence of a protein completely determines its three-dimensional structure. Milo Lin and colleagues at the California Institute of Technology have determined the speed limit of protein folding by measuring and modeling one of the simplest shortest steps in the process the initial formation of a common protein structure called an alpha helix. They modeled this protein component as a collection of connected spheres. They also experimentally observed the same folding process by making a tiny protein of five amino acids and tracking the folding over the course of a few nanoseconds. Comparing the model and experiment allowed them to identify the factors that limit folding speed.

J39.00001 - <http://meetings.aps.org/Meeting/MAR11/Event/139352> [33]

## **RURAL STOCK EXCHANGES AND PLANETARY-SCALE TRADING**

Physicists in Boston are exploring the wisdom of decentralizing stock exchanges. Alexander Wissner-Gross, of MIT and Harvard University, and colleagues analyzed the advantage of coordinating financial transactions from centralized locations, asking whether it would be advantageous to decentralize exchanges, and if so, where the exchanges should be located. Their idea, first presented last year in the journal *Physical Review E*, is that putting an intermediate trading center between two major centers is advantageous if the trading is rapid and auditable. They found that there is always an optimal trading position located between any two points on the Earth, with some in rural areas. They worked out a formula for calculating where the locations could be. At the 2011 March Meeting, they will present detailed results that examine what happens when there are multiple intermediate trading points located between major centers of commerce. They have worked out some of the most profitable locations on Earth from which to coordinate trading. Rather than consolidate trading at places like the New York Stock Exchange, the analysis calls for treating the planet itself as one giant trading floor something they are now speaking to a number of companies about doing.

B14.00002 - <http://meetings.aps.org/Meeting/MAR11/Event/137044> [34]



## THE PHYSICS OF ECONOMIC DIVERSITY

Combining statistical physics and economic development theory, physicist Cesar A. Hidalgo of MIT's Media Lab along with Ricard Hausmann, the director of the Center for International Development at Harvard University and former chief economist of the Inter-American Development Bank, has modeled economic data from countries around the world to predict future economic production. There is a predictable aspect to the global economy, Hidalgo said, but the processes operate over periods of 10-15 years, which is much longer than the time scales of political cycles. They found a set of universal rules that create robust economic patterns seen across the globe. The ability of a country to produce a new product in the future, for instance, is highly dependent on the specific mix of products the country currently produces. This makes predicting a country's future industries possible. Moreover, economic diversity itself tends to be "contagious," crossing borders from one country to the next. Countries are 50 percent more likely to begin exporting a new product if a neighboring country is already exporting that product. The work has raised the interest of the World Bank and the United Nations Development Programme. The researchers claim that the rise of China over the last decade and the crash of Greece in the last few years would have been predictable using their model because of the economic diversity of those two countries in the 1990s. Looking forward for the next two decades, they predict that Turkey, Indonesia, and Vietnam should all see stellar growth. They believe Russia, however, will experience more modest and volatile growth.

J7.00005 - <http://meetings.aps.org/Meeting/MAR11/Event/138938> [35]

## PHYSICS HISTORY/INTERNATIONAL PHYSICS

Session V24, History of Physics and International Programs, covers a spectrum of historical topics, including an effort just after World War II to control the spread of nuclear weapons, the 1946 Acheson-Lilienthal Report on the International Control of Atomic Energy, the wealth of radio research that originated in wartime radar work at MIT, Willie Hobbs Moore (1934-1994) -- the first female African-American physicist, physics research in sub-Saharan Africa, and talks about research in Finland, Latin America, and East Asia. Session X8, Migrations of Physicists, is about the movement of physicists across international borders. The topics include a look at the International Centre for Theoretical Physics in Trieste, Italy, the forced migration of scientists under the Nazis, the migration of scientists from Central Europe during the Cold War, the migration of German scientists into Russia in the 18th and 19th centuries as well as the emigration of scientists from Russia during the Soviet and post-Soviet eras, and the complex migration patterns of Chinese physicists in America--some of whom stay in the U.S. while others return.

V24 -

<http://meetings.aps.org/Meeting/MAR11/sessionindex2/?SessionEventID=145447>

[36]

X8 -

<http://meetings.aps.org/Meeting/MAR11/sessionindex2/?SessionEventID=144954>

[37]

## OTHER INTERESTING TALKS BY DAY

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## MONDAY, MARCH 21

- Gauging a physicist's success, beyond citation counting  
<http://meetings.aps.org/Meeting/MAR11/Event/137046> [38]
- How do neurons grow?  
<http://meetings.aps.org/Meeting/MAR11/Event/138263> [39]
- A look at Kamerlingh Onnes' discovery of superconductivity in 1911  
<http://meetings.aps.org/Meeting/MAR11/Event/136943> [40]
- A large quilt, measuring 84 x 84 inches, will be used to illustrate the quantum states of graphene  
<http://meetings.aps.org/Meeting/MAR11/Event/137259> [41]
- Using a quantum dot as a beam splitter for Cooper pairs of electrons as a source of entangled particles  
<http://meetings.aps.org/Meeting/MAR11/Event/136919> [42]
- qubits in a semiconducting nanowire,  
<http://meetings.aps.org/Meeting/MAR11/Event/136920> [43]
- A new approach for high-efficiency water desalination  
<http://meetings.aps.org/Meeting/MAR11/Event/136440> [44]
- New materials that can address the challenges of lithium-ion batteries for energy storage <http://meetings.aps.org/Meeting/MAR11/Event/136582> [45]
- Applications of Statistical and Nonlinear Physics to Social Systems <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145192> [46]
- Bionanotechnology <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145463> [47]

## TUESDAY, MARCH 22

- Fingerless robotic hand,  
<http://meetings.aps.org/Meeting/MAR11/Event/139853> [48]
- Clay bubbles and the origin of cellular life,  
<http://meetings.aps.org/Meeting/MAR11/Event/139811> [49]
- Quantum magnetic analog of forest fires,  
<http://meetings.aps.org/Meeting/MAR11/Event/138357> [50]
- Supercurrents flowing in ferromagnets,  
<http://meetings.aps.org/Meeting/MAR11/Event/138346> [51]
- Computational physics' greatest hits,  
<http://meetings.aps.org/Meeting/MAR11/Event/145165> [52]
- The first real single-molecule transistor,  
<http://meetings.aps.org/Meeting/MAR11/Event/139765> [53]
- Drowning in Carbon: The Imperative of Nuclear Power <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=138365> [54]
- The physics of cancer <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145356> [55]
- Financial, social, co-evolving and interdependent networks <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=138933> [56]

## WEDNESDAY, MARCH 23

- Electronic properties of graphene change depending on how many layers are stacked up, including effects of twisting one layer relative to another <http://meetings.aps.org/Meeting/MAR11/Event/141721> [57]
- Observation of a box-shaped shock wave during the collision of two clouds of fermion atoms <http://meetings.aps.org/Meeting/MAR11/Event/140870> [58]
- The physics of evolution <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=140908> [59]
- Theoretical physics in industrial settings: the auto industry, high-tech sector, oil and gas industries <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=141742> [60]

## THURSDAY, MARCH 24

- The smallest ever loops of high-temp superconducting films, part of a surface patterned with loops and nanowires, for the purpose of making electronic devices <http://meetings.aps.org/Meeting/MAR11/Event/143083> [61]
- Only cryostat where one can directly view a 1-K surface through a room-temperature window <http://meetings.aps.org/Meeting/MAR11/Event/143421> [62]
- Pressure-assisted ejection of DNA from bacteriophage <http://meetings.aps.org/Meeting/MAR11/Event/142750> [63]
- Compressed air or vacuum for moving automobiles and trains <http://meetings.aps.org/Meeting/MAR11/Event/143209> [64]

## FRIDAY, MARCH 25

- Silicene nanoribbons, silicon analogues of graphene <http://meetings.aps.org/Meeting/MAR11/Event/144260> [65]
- Highest electric field strength,  $2 \times 10^9$  V/m, in a plate capacitor gap <http://meetings.aps.org/Meeting/MAR11/Event/144457> [66]
- Crystal growth dynamics <http://meetings.aps.org/Meeting/MAR11/Event/144019> [67]

[SOURCE](#) [68]

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<http://www.chem.info/news/2011/02/largest-physics-meeting-year-march-20-25-2011-dallas-texas>

### Links:

[1] <http://meetings.aps.org/Meeting/MAR11/Event/143410>

[2] <http://meetings.aps.org/Meeting/MAR11/Event/143409>

- [3] <http://meetings.aps.org/Meeting/MAR11/Event/137285>
- [4] <http://meetings.aps.org/Meeting/MAR11/Event/143057>
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- [15] <http://meetings.aps.org/Meeting/MAR11/Event/137367>
- [16] <http://meetings.aps.org/Meeting/MAR11/Event/137364>
- [17] <http://meetings.aps.org/Meeting/MAR11/Event/144916>
- [18] <http://meetings.aps.org/Meeting/MAR11/Event/137248>
- [19] <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=144813>
- [20] <http://meetings.aps.org/Meeting/MAR11/Event/136702>
- [21] <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145212>
- [22] <http://meetings.aps.org/Meeting/MAR11/sessionindex2/?SessionEventID=145542>
- [23] <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145321>
- [24] <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145322>
- [25] <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=145323>
- [26] <http://meetings.aps.org/Meeting/MAR11/Event/137047>
- [27] <http://meetings.aps.org/Meeting/MAR11/sessionindex2/?SessionEventID=145325>
- [28] <http://meetings.aps.org/Meeting/MAR11/Event/142744>
- [29] <http://meetings.aps.org/Meeting/MAR11/Event/143784>
- [30] <http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=139300>
- [31] <http://meetings.aps.org/Meeting/MAR11/Event/136468>
- [32] <http://meetings.aps.org/Meeting/MAR11/Event/144010>
- [33] <http://meetings.aps.org/Meeting/MAR11/Event/139352>
- [34] <http://meetings.aps.org/Meeting/MAR11/Event/137044>
- [35] <http://meetings.aps.org/Meeting/MAR11/Event/138938>
- [36] <http://meetings.aps.org/Meeting/MAR11/sessionindex2/?SessionEventID=145447>
- [37] <http://meetings.aps.org/Meeting/MAR11/sessionindex2/?SessionEventID=144954>
- [38] <http://meetings.aps.org/Meeting/MAR11/Event/137046>
- [39] <http://meetings.aps.org/Meeting/MAR11/Event/138263>
- [40] <http://meetings.aps.org/Meeting/MAR11/Event/136943>
- [41] <http://meetings.aps.org/Meeting/MAR11/Event/137259>

## Largest physics meeting of the year: March 20-25, 2011, Dallas, Texas

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[42] <http://meetings.aps.org/Meeting/MAR11/Event/136919>

[43] <http://meetings.aps.org/Meeting/MAR11/Event/136920>

[44] <http://meetings.aps.org/Meeting/MAR11/Event/136440>

[45] <http://meetings.aps.org/Meeting/MAR11/Event/136582>

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[57] <http://meetings.aps.org/Meeting/MAR11/Event/141721>

[58] <http://meetings.aps.org/Meeting/MAR11/Event/140870>

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<http://meetings.aps.org/Meeting/MAR11/SessionIndex2/?SessionEventID=141742>

[61] <http://meetings.aps.org/Meeting/MAR11/Event/143083>

[62] <http://meetings.aps.org/Meeting/MAR11/Event/143421>

[63] <http://meetings.aps.org/Meeting/MAR11/Event/142750>

[64] <http://meetings.aps.org/Meeting/MAR11/Event/143209>

[65] <http://meetings.aps.org/Meeting/MAR11/Event/144260>

[66] <http://meetings.aps.org/Meeting/MAR11/Event/144457>

[67] <http://meetings.aps.org/Meeting/MAR11/Event/144019>

[68] [http://www.eurekalert.org/pub\\_releases/2011-02/aps-lpm020911.php](http://www.eurekalert.org/pub_releases/2011-02/aps-lpm020911.php)