



ADHD DETECTION BREAKTHROUGH

A 'six-minute' analysis of brainwaves that can detect Attention Deficit Hyperactivity Disorder (ADHD) has won Dr Jong-Won Kim and recent graduate, Dr Cliff Kerr, of the University of Sydney's School of Physics, the international 2010 BRAINnet Challenge. "It still has to be refined, of course, but using our method to detect ADHD, we hope will eventually lead to a more accurate diagnosis for patients," said Dr Kerr (above).

The joint entry focused on demonstrating that several methods show potential use in diagnosing ADHD,

including visual evoked potential mean voltage, detrended fluctuation analysis, and heart rate auto-correlation.

Based on a simple combination of these methods, a diagnostic measure was developed with a specificity and sensitivity of 75%, results that are comparable to existing quantitative EEG methods, which use far more parameters. These findings will be investigated on larger sample sizes, increasing their statistical significance and allowing refinement and augmentation of the diagnostic method.

Drs Kerr and Kim, who are based in Brain Dynamics within the Complex Systems group, plan to hone their research even further. "There are many children on prescription drugs for ADHD. Our method will be able to check whether or not they really need to be. Winning the BRAINnet Challenge is a great encouragement for our continued research into this area."

Visit: www.physics.usyd.edu.au/brain-dynamics/

\$40M GRANT FOR PHYSICS

A grant for \$40million from the Federal Government to build the new Australian Institute of Nanoscience was announced in a joint statement from Deputy PM, The Hon Julia Gillard and the Minister for Science, The Hon Kim Carr made on 11 June 2010. The University of Sydney will receive the funds to establish the Australian Institute for Nanoscience (AIN).

The institute will develop nano-devices that will have impacts in many fields including physics, materials science, photonics and medicine. As well the institute will build research capacity and expand the scope for collaboration with high-tech Australian businesses, leading to direct economic and social benefits. Professor Clive Baldock, Head of School, said he was delighted with the outcome and thanked all those who had worked so hard on the proposal. The university is to provide additional funding to help with the costs of the new building. For more information on the grants: minister.innovation.gov.au/Carr/Pages/

CONFERENCE

Input-Output Conference - the Integrated Sustainability Analysis Group based within the School of Physics will be hosting the 18th International Conference on Input-Output Economics from 20-25 June 2010. To be held at the University of Sydney the theme of the conference is "Re-Thinking Economic Growth Towards Sustainability and Wellbeing" - reflecting important concerns that have been raised by different sectors over the past few years. It also reflects a major challenge we are facing: to avert dangerous environmental change whilst being able to ensure well-being for the world's people. For further details visit: www.isa.org.usyd.edu.au/io_2010/index.html

AIP - CERN TALK

Angels & Demons: The real CERN is the title of the talk to be given by Dr Susanna Guatelli, University of Wollongong in the Slade Lecture Theatre, School of Physics, University of Sydney.

Time: 6.35pm -7.30pm with refreshments from 6.00pm Date; Tuesday 29 June.

To register contact Dr Fred Osman via email: fred_osman@exemail.com.au

SIFA STAR AWARDED

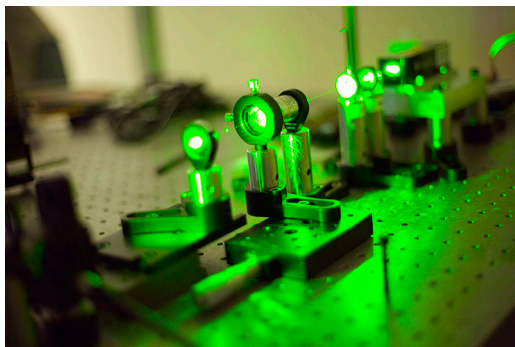
Congratulations to Dr Mike Ireland (right) who has been awarded the 2010 Louise Webster Prize. This prize is awarded annually by the Astronomical Society of Australia (ASA) in recognition of outstanding research by a scientist early in their post-doctoral career, on the basis of the scientific impact of a single research paper. He was nominated for his paper “The Disk Around CoKu Tauri/4: Circumbinary, Not Transitional”, which appeared in the *Astrophysical Journal Letters* in May 2008. This paper overturned prevailing wisdom about the link between planet formation and disk structure in young stars.

Dr Ireland is an ARC Postdoctoral Fellow based within the Sydney Institute for Astronomy.

For more on SIFA visit: sydney.edu.au/science/physics/sifa/



NEW LASER TO SPEED UP INFORMATION SUPERHIGHWAY



Silicon chips may soon be able to transmit and process information at extremely high speeds using light, with help from a University of Sydney invention, a new pulsed laser that allows light to be generated on a computer chip. Associate Professor David Moss, a senior researcher with the University’s Institute of Photonics and Optical Science (IPOS), leads an international team, which has developed the laser, says the laser produces ultra short light pulses at record speeds to process and transmit information, and in doing so will dramatically speed up computing if implemented on a large scale. A/Professor Moss says the on-chip pulsed light source is key to enabling ultra high speed signal processing and transmission of data either on-chip or between chips,

“This technology can ultimately provide consumers with cheaper and faster computers. Currently information on a chip is shuffled around using electronic signals over copper wires, or interconnects. We know that metal is prone to ‘choking’ on the bandwidth bottleneck,” he explains. “Using light for ultrahigh speed information processing and transmission on a silicon chip is an important breakthrough. The ever-growing demand for even faster technology means ultrafast on-chip and chip-to-chip optical data communications are important.” “It’s clear that more efficient methods to transmit vast amounts of data around circuit boards are needed to not only to keep up with but also go beyond, which primarily is what this research is about.”

Associate Professor Moss’ paper Subpicosecond 200GHz soliton laser based on a C-MOS compatible integrated microring resonator was recently presented as a prestigious post-deadline paper at the IEEE/OSA Conference for Lasers and Electro-Optics (CLEO), in San Jose, California.

YOUR STORY

Your stories are always interesting. We love to hear from our alumni and friends and what they’ve been up to over the years or even just starting out. We can publish full stories (750 words) in *Alumni News* and smaller items - awards, events etc. here in *Alumni Update*. Send items to Alison Muir - alison.muir@sydney.edu.au