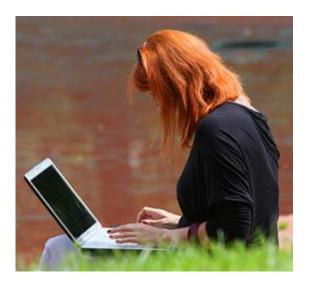


A new SPIDER for the web

August 22 2011



This new 'SPIDER chip' is much more efficient than the current technology powering the internet.

(PhysOrg.com) -- A revolutionary new chip that uses little energy and operates at ultrafast speeds for telecommunications and computing is set to replace the power-hungry, expensive and bulky equipment that currently resides at the core of the internet.

Developed by an international team led by University of Sydney physicist Associate Professor David Moss, the chip uses technology called Spectral Phase Interferometry for Direct Electric-Field Reconstruction, or SPIDER.

The internet uses high-speed signals that exploit the coherence of light to



transmit information. Until now it has only been possible to accurately measure the intensity and phase of <u>optical pulses</u> with bulky and expensive laboratory equipment.

"The ability to monitor and characterise these signals has, until now, been restricted to optical laboratories," explains Moss, a 2011 Eureka Prize finalist in the category Innovations in Computer Science.

"Using the SPIDER technology, applications such as telecommunications, high-precision broadband sensing and spectroscopy, metrology, molecular fingerprinting, optical clocks, and even attosecond physics, are all set for a major speed upgrade," he says.

In addition to using the SPIDER technology, the <u>chip</u> not only integrates with silicon computer chips, it is fabricated using the same methods as <u>silicon chips</u>, making it ideal for a wide range of applications.

Associate Professor Moss says the 'SPIDER chip' will give all parts of the internet, from long distance fibre-optic networks to silicon routing chips, the ability to measure state-of-the-art signals where the phase of light is used to encode information.

Professor David Moss is a senior researcher with the ARC Centre of Excellence CUDOS and the Institute of Photonics and <u>Optical Science</u> (IPOS) based within the School of Physics at the University of Sydney.

A paper, 'Sub-picosecond phase-sensitive optical pulse characterization on a chip', will be published in <u>Nature Photonics</u> in August 2011.

Provided by University of Sydney

Citation: A new SPIDER for the web (2011, August 22) retrieved 19 April 2024 from



https://phys.org/news/2011-08-spider-web.html

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.