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## **The Future of Medical Imaging Instrumentation**

**Paul LECOQ**

CERN, GENEVA, Switzerland

In-vivo molecular imaging is becoming the basis for tailored therapies and therapeutic monitoring of major diseases like cancer and genetic disorders. The repeatability of non-invasive approaches allows precise evaluation of drug targeting and pharmacokinetics studies on small animals and precise screening and treatment follow-up of patients.

This talk will explain the critical parameters of modern medical imaging and will motivate the need of improved sensitivity, spatial resolution and multimodality capability compared to presently available instruments. In particular it will illustrate the need for the development of a high resolution, high sensitivity multi-energy X-ray/gamma detection module operating in a very high imaging magnetic field. This module should provide a quantum step towards true multimodality involving Magnetic Resonance Imaging, Computer Tomography and Positron Emission Tomography to co-register quantitatively the anatomy with the metabolic function.

The technological developments in several areas of applied physics, the new generation of particle physics detectors and the development of an information based society all combine to enhance the performance of presently available imaging tools.

A project for the creation of a European Research Centre in Medical Imaging (CERIMED) is supported by the Université de la Méditerranée in Marseilles (France), in partnership with a network of national and European laboratories, organisations and industries.

The goal of CERIMED is to provide a space of synergy for the various scientific disciplines involved in medical imaging, in close partnership with industry. The aim is to create a European pole of competence and infrastructures supporting an ambitious research and development programme in medical imaging and to prepare the future generations of medical imaging systems, a decisive contribution towards solving the great public health issues of our time.

**Montag, 4. Dezember 2006, 17:30 Uhr (ab 17:00 Uhr Kaffee)**

Technische Universität Wien, Freihaus,  
Hörsaal 5 (Turm A, grüner Bereich, 2. Stock)  
Wiedner Hauptstr. 8-10, A-1040 Wien

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