

Inaugural Lecture: Professor Valery Smyshlyaev
“Living in a multi-scale world (and making a mathematical sense of it)”

Speaker: Professor Valery Smyshlyaev, UCL

UCL Contact: Bonita Carboo b.carboo@ucl.ac.uk (*Visitors from outside UCL please email in advance*).

Date/Time: Wednesday, 7 March 2012, 4.30pm

Venue: Room 505, Mathematics Department

Title: Living in a multi-scale world (and making a mathematical sense of it)

Abstract

Nearly everything around us displays ‘multiple scale’ effects, where interactions between the ‘smaller’ and the ‘larger’ often lead to unusual effects. These can sometimes be explained, predicted, and quantified using tools of mathematical analysis of multi-scale partial differential equations. I will describe some examples from high-frequency scattering and from physics of ‘metamaterials’ (i.e. composite materials with macroscopic properties radically different from those of conventional materials). I will argue that mathematics not only subjects ideas based on physical intuition to scrutiny of rigorous mathematical analysis and hence assists in assessing the accuracy of the physical models (and of their possible limitations), but also leads to rigorously deriving novel mathematical models displaying new physical effects as well as designing new efficient numerical schemes. This prompts in turn development of a new analysis requiring revisiting in this multi-scale context of such fundamental mathematical concepts as convergence and compactness (e.g. in the spectral, operator, and variational theories).

Details

Celebrating the Inaugural Lecture of Professor Valery P Smyshlyaev in Room 505, Mathematics Department

Programme:

16:30 Introduction to Proceedings, Professor Richard Catlow, Executive Dean, Mathematical and Physical Sciences Faculty (MAPS), UCL.

16:40 Inaugural Lecture by Professor Valery Smyshlyaev “Living in a multi-scale world (and making a mathematical sense of it)”

Lecture is chaired by Professor Richard Catlow, Executive Dean, Mathematical and Physical Sciences Faculty (MAPS), UCL and introduced by Professor Robb McDonald, Head of Department of Mathematics. Professor Robb McDonald will be giving the vote of thanks.

17:30 Reception in Room 502

Link: <http://www.ucl.ac.uk/Mathematics/staff/VS.html>