About this Colloquium

Suppose one wants to recover an unknown signal $x$ in $\mathbb{R}^n$ from a given vector $Ax=b$ in $\mathbb{R}^m$ of linear measurements of the signal $x$. If the number of measurements $m$ is less than the degrees of freedom $n$ of the signal, then the problem is underdetermined and the solution $x$ is not unique. However, if we also know that $x$ is _sparse_ or _compressible_ with respect to some basis, then it is a remarkable fact that (given some assumptions on the measurement matrix $A$) we can reconstruct $x$ from the measurements $b$ with high accuracy, and in some cases with perfect accuracy. Furthermore, the algorithm for performing the reconstruction is computationally feasible. This observation underlies the newly developing field of _compressed sensing_. In this talk we will discuss some of the mathematical foundations of this field.

About Terence Tao

Terence Tao was born in Adelaide, Australia in 1975. He has been a professor of mathematics at UCLA since 1999, having completed his PhD under Elias Stein at Princeton in 1996. Tao’s areas of research include harmonic analysis, PDE, combinatorics, and number theory. He has received a number of awards, including the Salem Prize in 2000, the Bochner Prize in 2002, the Fields Medal and SASTRA Ramanujan Prize in 2006, the MacArthur Fellowship and Ostrowski Prize in 2007, and the Waterman Award in 2008. Terence Tao also currently holds the James and Carol Collins chair in mathematics at UCLA, and is a Fellow of the Royal Society, the Australian Academy of Sciences (Corresponding Member), and the National Academy of Sciences (Foreign member).

Colloquium Details

Date: Friday, 4 September 2009, 1-2pm
Venue: Engineering lecture Theatre 1, UWA
For more information, or to RSVP please contact Professor Cheryl Praeger, School of Mathematics and Statistics, at praeger@maths.uwa.edu.au

Terrence Tao will also present the 2009 Clay-Mahler lecture on Thursday 3rd May at 6pm in the Social Sciences Lecture Theatre, UWA. The Mahler lectures are a biennial activity organised by the Australian Mathematical Society and are funded by the Clay Mathematical Institute, the Australian Mathematical Society and the Australian Mathematical Sciences Institute.