Mathematical Induction and Some Combinatorial Indentities

Dr. Peng Jiming
University of Illinois at Urbana-Champaign

Date: 27 May 2013 (Monday)
Time: 11.00am – 11.45am
Venue: MAS Executive Classroom 2, MAS-03-07
School of Physical and Mathematical Sciences

In this lecture, we give a basic introduction to mathematical induction and use it to prove some combinatorial identities. We first outline the major steps in mathematical induction. Then we introduce the so-called weak and strong induction. We apply weak or strong induction to prove some combinatorial identities such as the number of all subsets of a set with n elements, and the relation between the number of vertices and edges of a tree.

Speaker Biography

Jiming Peng is an assistant professor in the department of industrial and enterprise system engineering, University of Illinois at Urbana-Champaign. He received his PhD degree in 2001 from Delft University of Technology, the Netherlands. Then he joined McMaster University in Canada and moved to Illinois in 2006. His research covers several branches in the field of mathematical programming such as interior-point methods for linear conic optimization, approximation/relaxation to large scale mixed integer nonlinear programming, sparse/low rank solutions in optimization, as well as optimization modeling and algorithm design with applications from data mining and financial engineering. So far he has published a research monograph and more than 50 papers in major optimization journals or top CS/IEEE conferences. For his research works in optimization, he received the Stieltjes prize for the best thesis in mathematics from Stieltjes institute, the Netherlands (2001) and the premier research excellence award from Ontario, Canada (2003). He was also selected as one of the three finalists for the Tucker prize awarded by the mathematical optimization society in 2003. He has been serving as an associate editor for the journal "optimization letters" since 2006.

Host: Division of Mathematical Sciences, School of Physical and Mathematical Sciences