What is a logic for PTIME?

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Date :  5 October 2010 (Tuesday)
Time :  1.30 pm – 2.30 pm
Venue:  MAS Executive Classroom 1, MAS-03-06
School of Physical and Mathematical Sciences

Whether there is a logic capturing PTIME is the central problem in descriptive complexity. In the first part of the talk I will give a very brief introduction of the problem, where it comes from, its connection to database theory, classical complexity, and graph theory, and its current status. Next, I will explain our recent joint work with Joerg Flum which shows that one major open problem in proof complexity turns out to be a special instance of the logic capturing PTIME question. Our result also links the problem to a question in parameterized complexity.

Speaker Biography

Yijia Chen is currently an Associate Professor of Computer Science at Shanghai Jiao Tong University. He received his Ph.D. degree in computer science from the same university in 2000, and a second Ph.D. degree in mathematics from University of Freiburg in Germany in 2004. His research interests include logic in computer science, computational complexity and graph theory.

Host: Prof. Chen Ning, Division of Mathematical Sciences, School of Physical and Mathematical Sciences