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香港中文大學
The Chinese University of Hong Kong

Institute of Theoretical Computer Science and Communications

## *ITCSC Seminar*

# The Exponential Mechanism for Social Welfare: Private, Truthful, and Nearly Optimal

*By*
**Mr. Zhiyi Huang**
*PhD student, CIS Department, University of Pennsylvania*

***April 26, 2012, Thursday***
***2:30 p.m. - 3:30 p.m.***
***Rm121, 1/F., Ho Sin Han Engineering Building, CUHK***

**Abstract:**
In this paper we show that for any mechanism design problem with the objective of maximizing social welfare, the exponential mechanism can be implemented as a truthful mechanism while still preserving differential privacy. Our instantiation of the exponential mechanism can be interpreted as a generalization of the VCG mechanism in the sense that the VCG mechanism is the extreme case when the privacy parameter goes to infinity. To our knowledge, this is the first general tool for designing mechanisms that are both truthful and differentially private.

**Biography:**
I am a 4th-year PhD student in the CIS department at University of Pennsylvania. I am very fortunate to have Prof. Sampath Kannan as my advisor. Before I came to US, I took undergraduate study in the Microsoft Special Pilot CS Class under Prof. Andrew Yao at Tsinghua University. During high school, I became very interested in mathematics and won some MO medals in 2004.

My research interests in general are algorithms and computational complexity, mainly focusing on algorithmic game theory. My current research is listed below:

Blackbox reductions in algorithmic mechanism design
Revenue optimal multi-item auctions
Differentially private and truthful mechanisms

******* ALL ARE WELCOME *******

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