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## Quantum tensor singular value decomposition with applications to recommendation systems

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Venue: Room G6302, City University of Hong Kong  
Reception starts at 4:15pm  
(Language: **English**)

### **Abstract**

In this talk, we present a quantum singular value decomposition algorithm for third-order tensors inspired by the classical algorithm of tensor singular value decomposition (t-svd). It can be proved that the quantum t-svd for a third-order tensor of dimension  $N$  achieves the complexity of  $O(\text{polylog}(N))$ , an exponential speedup over its classical counterpart. As an application, we propose a quantum algorithm for context-aware recommendation systems which incorporates the contextual situation of users to the personalized recommendation.

### **About the Speaker**

Guofeng Zhang received his B.Sc. degree and M.Sc. degree from Northeastern University, Shenyang, China, in 1998 and 2000 respectively. He received a Ph.D. degree in Applied Mathematics from the University of Alberta, Edmonton, Canada, in 2005. During 2005–2006, he was a Postdoc Fellow at the University of Windsor, Windsor, Canada. He joined the School of Electronic Engineering of the University of Electronic Science and Technology of China, Chengdu, China, in 2007. From April 2010 to December 2011 he was a Research Fellow at the Australian National University. He joined the Hong Kong polytechnic University in December 2011 and currently is an Associate Professor in the Department of Applied Mathematics. His research interests include quantum information, quantum control and quantum algorithm.