

# Smart Grids: A Complex Network View

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## Abstract

Smart Grids are electric networks that employ innovative and intelligent monitoring, control, communication, and self-healing technologies to deliver better connections and operations for generators and distributors, flexible choices for consumers, and reliability and security of electricity supply. Smart Grids are complex networks in nature that face many new theoretical and practical challenges for the future developments.

In this talk, we will first give a brief introduction of Smart Grids and their recent developments, and then examine the research issues in Smart Grids from a complex network viewpoint. We will also discuss potential new ways of simplifying the modeling, assessment and control tasks by using the Complex Networks theory. Some of our recent research in this field will be discussed at the end.

## About the Speaker



**Xinghuo Yu** received BSc and MSc degrees from the University of Science and Technology of China, Hefei China, in 1982 and 1984, and PhD degree from South-East University, Nanjing China in 1988, respectively. He is now with RMIT University (Royal Melbourne Institute of Technology), Melbourne Australia, where he is the Director of RMIT Platform Technologies Research Institute. Professor Yu's research interests include variable structure and nonlinear control, complex and intelligent systems and industrial applications. He has published over 350 refereed papers in technical journals, books and conference

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Professor Yu is serving as an Associate Editor of IEEE Transactions on Circuits and Systems Part I, IEEE Transactions on Industrial Informatics, IEEE Transactions on Industrial Electronics, and several other scholarly journals. He received an award under the Thousand Talents Program of the Chinese Government in 2010, a Chang Jiang Scholar (Chair Professor) Award from the Ministry of Education of China in 2009, the 1995 Central Queensland University Vice Chancellor's Award for Research, and was made Emeritus Professor of Central Queensland University in 2002 for his long term contributions.

Professor Yu is a Fellow of the IEEE, Vice-President (Planning and Development) of IEEE Industrial Electronics Society and an IEEE Distinguished Lecturer. He is also a Fellow of the Institution of Engineers Australia and the Australian Computer Society. Professor Yu is currently chairing Technical Committee on Smart Grids of IEEE Industrial Electronics Society.