

AMO 科学セミナー（理論）@UEC のご案内

下記の要領で Ravi Rau 先生によるセミナーを電通大で開催いたします。

Rau 先生は長くルイジアナ州立大学で教鞭をとってこられた方で、AMO 科学の理論を専門に研究されています。原子内電子の動的相関を研究されてきたほか、近年では量子情報に関わる量子相関の研究をされています。学生さんにも理解できるレベルの一般的な話題について話して頂きます。研究室の研究者、学生の皆様もお誘い合わせのうえ、奮ってご参加下さい。

世話人：渡辺信一（電気通信大学 先進理工学専攻、shin.watanabe@uec.ac.jp）

AMO Science Seminar (Theory)@UEC

Date: Thursday, 21 August 2014

Time: 15:00-16:00 followed by Q&A

Place: Room 803, East 6 Building, UEC

Speaker: A. R. P. Rau, Alumni Professor of Physics

Department of Physics & Astronomy, Louisiana State University, Baton Rouge

Title: Quantum spins, real rotations, and a 1913 Ramanujan conjecture

Abstract: Quantum states are defined as complex variables and their time evolution is given by unitary transformations. For a quantum spin-1/2 or qubit of the field of quantum information, an equivalent picture of the Bloch sphere and real rotations of a unit vector from the origin to a point on the sphere has proved enormously useful. Extension of this nice geometrical view is also possible for a pair of qubits, such pairs being the fundamental objects of interest for entanglement and other quantum correlations that are used in quantum computing, key distribution, and teleportation. These will be discussed and a hundred-year old conjecture of number theory used to show that no such correspondence between unitary evolution and real rotations is available for systems of more qubits.

Short Biography:

Professor Rau's research career (Ph.D. 1970, U of Chicago) is mostly in theoretical atomic physics with a focus on electron correlations, especially for two slow electrons and a positive ion in the vicinity of threshold escape of the pair, and in topics such as quantum defect theory and symmetries in physics. He has however worked in the last fifteen years in quantum information, on problems involving entanglement and other correlations such as quantum discord, again with geometrical and symmetry approaches to these subjects.

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