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## **SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS**

**Dia 15 de Janeiro (terça-feira), às 13h30, na sala 6.2.33**

### **Geometry and Entanglement of Two-Qubit States in the Quantum Probabilistic Representation**

Vladimir I. Man'ko (Lebedev Institute, Russian Academy of Sciences)

Abstract:

A new geometric representation of qubit and qutrit states based on probability simplexes is used to describe the separability and entanglement properties of density matrices of two qubits. The Peres-Horodecki positive partial transpose (ppt)-criterion and the concurrence inequalities are formulated as the conditions that the introduced probability distributions must satisfy to present entanglement. A four-level system, where one or two states are inaccessible, is considered as an example of applying the elaborated probability approach in an explicit form. The areas of three Triadas of Malevich's squares for entangled states of two qubits are defined through the qutrit state, and the critical values of the sum of their areas are calculated. We always find an interval for the sum of the square areas, which provides the possibility for an experimental checkup of the entanglement of the system in terms of the probabilities.

(Ref: arXiv: 1808.08194, M. A. Man'ko, V. I. Man'ko et al.)

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