Thursday December 12, 16h15 – 17h15 (CYCL01)

Speaker: Prof. **Valentin Ovsienko** (Université de Reims)

Quantum numbers? Surely you're joking, Mr. Feynman!

Abstract: The ideas of quantum physics have had an enormous impact on the development of mathematics, all domains have been influenced. Numerous notions have emerged, like quantum groups and algebras, quantum calculus, special fonctions, among others. Numbers, the most elementary and ancient concept at the heart of mathematics since the Babylonians, should also have their place in the quantum landscape. The talk will give an elementary and accessible overview of the emerging theory of quantum numbers, or "q-numbers", including motivations, first results and the relation with other branches of mathematics.

Thursday February 22 16h15 (CYCL01)

Speaker: Prof. **Jean-Charles Delvenne** (ICTEAM - UCLouvain)

Markov chains, transport theory and statistical physics

Abstract: We look at the following motivating problem: how to move an electronic memory from a 'zero' state to a 'one' state, at minimal energy cost? Mathematically, this amounts to design a Markov chain that drives a certain probability measure (encoding a 'zero') towards another one (a 'one') through an 'optimal' path --- an avatar of Gaspard Monge's so-called 'earth mover problem', at the core of transport theory. We explore various recent results and conjectures around this theme at the interface of statistical physics and Markov chain theory. We support these by illustrations on realistic simulations on electronic memories.