

Grothendieck's theorem and applications to quantum information theory.

In 1953 A. Grothendieck proved his famous "fundamental theorem in the metric theory of tensor products". This theorem has been an essential result in Banach space theory and, in the last decades, has found unexpected applications to some fields such as combinatorial optimization and Quantum Information theory.

The aim of this course is to present this result, which has a simple proof, and explain some of its applications to quantum information theory and combinatorial optimization.

Syllabus:

1. Statement and proof of Grothendieck's theorem.
2. Applications of Grothendieck's theorem to Bell inequalities in quantum information theory and communication complexity.
3. Applications of Grothendieck's theorem to combinatorial optimization and connections with graph theory.