**19th Workshop: Noncommutative Probability, Noncommutative Harmonic Analysis and Related Topics with Applications, 31.07-6.08.2022, Bd̆ż˝dlewo**

# ABSTRACT

Paola Zurlo (Università Aldo Moro di Bari)

**On $C^*$-norms on $\mathbb{Z}_2$-graded tensor products**

**Abstract**: Tensor products of $C^*$-algebras are framed in a rather accomplished theory, where virtually everything is known. Adding a grading, though, may cause novel phenomena to occur. In the work I'm going to present most of the attention has been focused on the study of the so-called spatial norm. I'm going to define the latter in terms of the GNS representations of products of grading-invariant states (also known as even states). The definition involves the introduction of a notion of Fermi product of grading-equivariant representations (that turns out to be the GNS representation of the product state of two even states). In order to investigate this norm, it was necessary to identify the notion of a compatible norm on the algebraic Fermi product, i.e. a norm with respect to which the product grading is bounded. By providing a characterization of the extreme even states in terms of their restriction to the even part, I will prove that commutative $\mathbb{Z}_2$-graded $C^*$-algebras enjoy a nuclearity property and that the spatial norm is the smallest among all compatible $C^*$-norms.

The talk is based on the joint work:

[1] Crismale V., Rossi S., Zurlo P. *On $C^*$-norms on Fermi tensor products*, Banach J. Math. Anal., **16** (2022).