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**ALCIDES BUSS**, UFSC

*Groupoid actions - The symmetries of noncommutative spaces*

Groupoids are powerful objects with many applications in the theory of Operator Algebras. Important examples of  $C^*$ -algebras, like rotation algebras and Cuntz algebras have canonical groupoid models, that is, they can be described in terms of a groupoid. Properties of the  $C^*$ -algebra can then be read from the underlying groupoid model.

Groupoids can also be used to describe symmetries of  $C^*$ -algebras and the aim of this talk will be to explain how this works. More specifically, we introduce a notion of "action" of one groupoid  $H$  on another groupoid  $G$  using the theory of groupoid fibrations and explain how this induces an "action" of  $H$  on the groupoid  $C^*$ -algebra  $C^*(G)$ . In this setting we have a transformation groupoid  $G \rtimes H$  and its  $C^*$ -algebra  $C^*(G \rtimes H)$  can be described as a sort of "generalised crossed product"  $C^*(G) \rtimes H$ .