

# First Joint Meeting Brazil Italy of Mathematics

## Special Session: Optimal Control

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**Title:** Representation of the dynamics in non-commutative impulsive control problems

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**Abstract:** We consider impulsive control systems of the form

$$\dot{x} = f_0(t, x, u) + \sum_{k=1}^m f_k(x) \dot{u}.$$

Notions of solutions associated to possibly discontinuous control functions  $u$  are proposed in the literature even in the non-commutative case, i.e. when the Lie algebra generated by the vector fields  $f_k$  is non trivial. These definitions are justified from the fact that the related trajectories are limits, in some sense, of more classical ones. We investigate such notions of solutions and describe the underlying dynamics.