

Complex and symplectic structures on nilpotent almost abelian Lie groups

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The study of left-invariant geometric structures on nilpotent Lie groups is an active field of research and several results are known in low dimensions. A particularly intriguing problem within this field is the classification of nilpotent Lie groups that admit left-invariant complex or symplectic structures. Although there are many contributions to the subject, it is considered a wild problem and in general it is far from being solved.

In this talk, we will focus on left-invariant complex and symplectic structures on nilpotent almost abelian Lie groups. We will present the classification of nilpotent almost abelian Lie groups that admit left-invariant complex structures, and we will also discuss an analogous classification result for symplectic structures.

These results were obtained through collaborative work with María Laura Barberis (Universidad Nacional de Córdoba & CONICET, Argentina), Verónica Díaz (Universidad Nacional de Mar del Plata, Argentina), Yamile Godoy (Universidad Nacional de Córdoba & CONICET, Argentina) and María Isabel Hernández (CONACYT - CIMAT Mérida, Mexico).

In Special Session 23 on Special Geometries and Gauge Theory at the Mathematical Congress of the Americas 2025.