

G_2 -instantons on nilpotent Lie groups

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In this talk we will discuss recent advancements on G_2 -instantons on 7-dimensional 2-step nilpotent Lie groups endowed with a left-invariant co-closed G_2 -structures. I will present necessary and sufficient conditions for the characteristic connection of the G_2 -structure to be an instanton, in terms of the torsion of the G_2 -structure, the torsion of the connection and the Lie group structure. These conditions allow to show that the metrics corresponding to the G_2 -instantons define a naturally reductive structure on the simply connected 2-step nilpotent Lie group with left-invariant Riemannian metric.

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