



Universidad Politécnica de Madrid

Seminario del Grupo de Investigación Geometría y sus aplicaciones

<https://geometria.etsin.upm.es/>

Born Lie algebras

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Abstract: Born structures were introduced in physics in the context of T-duality in string theory. In this talk we explain that Born geometry appears at the intersection of pseudo-Kähler, para-Kähler, and complex product geometry. Despite its richness, few examples of manifolds carrying a Born structure are currently known. To address this, we investigate left-invariant Born structures on Lie groups, which amounts to study Born structures on Lie algebras. We first introduce basic notions of Lie algebras and geometric structures on real Lie algebras. We then provide a complete characterization of Lie algebras equipped with a Born structure through a pair of pseudo-Riemannian Lie algebras and the bicross product construction, a generalization of the well-known semidirect product. Finally, we classify all four-dimensional and nilpotent six-dimensional Lie algebras admitting a Born structure. This is a joint work with Paula Naomi Pilatus.

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