Curvature obstructions to the integrability of almost-hermitian structures

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Abstract

In sufficiently high dimensions, non-flat, constant curvature Riemannian metrics can be seen to obstruct the existence of special complex structures, such as Kaehler structures. More systematically, the curvature of any torsion-free connection obstructs the integrability of almost-complex structures in general. By specializing this observation to the almost-hermitian setting, and the Levi-Civita connection, we obtain structure-like, obstruction equations that allow us to study the effect that constraining the various, Riemannian curvatures has on integrability. In this talk, I will discuss how these equations can be used to rule out the existence of certain hermitian structures on compact manifolds.