

A criterion for holomorphic Lie algebroid connections

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Abstract-

Given a holomorphic Lie algebroid (V, \cdot) on a compact connected Riemann surface X , we give a necessary and sufficient condition for a holomorphic vector bundle E on X to admit a holomorphic Lie algebroid connection. If (V, \cdot) is nonsplit, then every holomorphic vector bundle on X admits a holomorphic Lie algebroid connection for (V, \cdot) . If (V, \cdot) is split, then a holomorphic vector bundle E on X admits a holomorphic Lie algebroid connection if and only if the degree of each indecomposable component of E is zero.

Index Terms- Atiyah bundle; Split Lie algebroid; Nonsplit Lie algebroid; Connection

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