

Cyclic Lie-Rinehart Algebras

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We study Lie-Rinehart algebra structures in a framework provided by duality pairings of modules over unital commutative associative algebra. Thus, we construct new examples of Lie brackets corresponding to a fixed anchor map whose image is a cyclic submodule of the derivation module, and therefore we call them cyclic Lie-Rinehart algebras. Special cases of our construction include Lie algebroid structures on cotangent bundles of differential manifolds and also certain differential operators that occur in mathematical physics.