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A Note on Central Extensions of Lie Groups

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Abstract. In this note we show that the existence of a central extension of a Lie groups G for a prescribed central extension of its Lie algebra can be completely characterized by the exactness of a certain set of 1-forms on G which are obtained by contracting the left-invariant 2-form Ω defined by the 2-cocycle of the Lie algebra extension with right-invariant vector fields. This criterion simplifies a criterion derived by Tuynman and Wiegerinck in the sense that they required in addition that the group of periods of Ω is discrete.

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