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Classification of 7 and 8 Dimensional Soliton Nilpotent Lie Algebras.

We present a computational method for classifying nilsoliton Lie algebras in a large subclass of the set of all nilpotent Lie algebras. We use it to classify the nilpotent Lie algebras which admit a nilsoliton inner product in this subclass in dimensions 7 and 8. We also classify among that class in dimensions 7 and 8 those that do not admit a nilsoliton inner product. (Received August 12, 2011)