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# Algorithm to find S-related Lie algebras

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S-expansion of Lie algebras is a procedure that contains the Inonu-Wigner contraction and most of its generalizations. Based on a recent work where we have presented a Java library to perform S-expansions of Lie algebras [arXiv:1703.04036] we provide an extension allowing to solve different problems. In particular, in this work we complement our library of [arXiv:1703.04036] with new methods allowing not only to answer whether two given algebras can be S-related, but also to determine and classify new expanded algebras satisfying certain conditions of interest in different problems. We also give and explain some program examples which are presented in such a way that a user, not necessarily an expert in Java, can easily modify them to perform his own calculations.

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