



Irregular locus of the commuting variety of reductive symmetric lie algebras and rigid pairs

Submitted by Emmanuel Lemoine on Thu, 12/05/2013 - 15:32

Titre	Irregular locus of the commuting variety of reductive symmetric lie algebras and rigid pairs
Type de publication	Article de revue
Auteur	Bulois, Michael [1]
Type	Article scientifique dans une revue à comité de lecture
Année	2011
Langue	Anglais
Date	2011/12/01
Numéro	4
Pagination	1027 - 1061
Volume	16
Titre de la revue	Transformation Groups
ISSN	1083-4362, 1531-586X
Mots-clés	Algebra [2], Topological Groups, Lie Groups [3]

Résumé en anglais

The aim of this paper is to describe the irregular locus of the commuting variety of a reductive symmetric Lie algebra. More precisely, we want to enlighten a remark of V. L. Popov. In one of his papers, the irregular locus of the commuting variety of any reductive Lie algebra is described and its codimension is computed. This provides a bound for the codimension of the singular locus of this commuting variety. V. L. Popov also suggests that his arguments and methods are suitable for obtaining analogous results in the symmetric setting. We show that some difficulties arise in this case and we obtain some results on the irregular locus of the component of maximal dimension of the “symmetric commuting variety”. As a by-product, we study some pairs of commuting elements specific to the symmetric case, that we call rigid pairs. These pairs allow us to find all symmetric Lie algebras whose commuting variety is reducible.

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DOI	10.1007/s00031-011-9162-5 [5]
Lien vers le document	http://hal.archives-ouvertes.fr/hal-00660569 [6]

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[6] <http://hal.archives-ouvertes.fr/hal-00660569>

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