

On the Commuting variety of a reductive Lie algebra and other related varieties

Jean-Yves Charbonnel (IMJ), Mouchira Zaiter (IMJ)

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In this note, one discusses about some varieties which are constructed analogously to the isospectral commuting varieties. These varieties are subvarieties of varieties having very simple desingularizations. For instance, this is the case of the nullcone of any cartesian power of a reductive Lie algebra and one proves that it has rational singularities. Moreover, as a byproduct of these investigations and the Ginzburg's results, one gets that the normalizations of the isospectral commuting variety and the commuting variety have rational singularities.

Comments: 61 pages. Few modifications in the presentation. Some proofs are improved or corrected

Subjects: **Representation Theory (math.RT)**; Algebraic Geometry (math.AG)

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