



Erratum: Cartan Subalgebras of \mathfrak{gl}_∞

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Abstract. We correct an oversight in the paper *Cartan Subalgebras of \mathfrak{gl}_∞* , Canad. Math. Bull. 46(2003), no. 4, 597–616. doi:10.4153/CMB-2003-056-1

A careful examination of the proof of Lemma 4.3 on p. 611 of [1] shows that in fact a stronger condition than (C2') is required here, which forces the following modifications. A statement at the end of the introduction said that

“... (C1') and (C2') are equivalent to (C3) for subalgebras of $\mathfrak{g} = \mathfrak{gl}(V, V_*)$ ”.

It should read “(C1') and (C2') follow from (C3)”

Theorem 4.1, Lemma 4.3, and Proposition 4.4 should be modified as follows:

Theorem 4.1 *A subalgebra $\mathfrak{h} \subseteq \mathfrak{g}$ is a Cartan subalgebra if and only if it satisfies the following condition:*

(C) $\mathfrak{h} = \overline{\mathfrak{g}^0(\mathfrak{h})}$ and the adjoint module of \mathfrak{h} is locally finite, where $\overline{\mathfrak{g}^0(\mathfrak{h})} = \cup_i \mathfrak{g}^0(\mathfrak{h}_i)$ for some (equivalently, any) exhaustion of \mathfrak{h} by finite dimensional subalgebras \mathfrak{h}_i .

Furthermore, a Cartan subalgebra \mathfrak{h} of \mathfrak{g} satisfies the following two equivalent conditions:

(C1') \mathfrak{h} is a locally nilpotent self-normalizing subalgebra whose adjoint module is locally finite;

(C2') \mathfrak{h} coincides with the maximal locally nilpotent \mathfrak{h} -submodule of \mathfrak{g} , and the adjoint module of \mathfrak{h} is locally finite.

Lemma 4.3 *Condition (C) implies $V_*^0(V^0) = \{0\}$, where $V^0 := V^0(\mathfrak{h}_s)$, $V_*^0 := V_*^0(\mathfrak{h}_s)$.*

Proposition 4.4 *Condition (C) implies that \mathfrak{h} is a Cartan subalgebra.*

Throughout the proofs of Lemma 4.3 and Proposition 4.4, $\mathfrak{g}^0(\mathfrak{h})$ should be replaced by $\overline{\mathfrak{g}^0(\mathfrak{h})}$.

References

- [1] K.-H. Neeb and I. Penkov, *Cartan Subalgebras of \mathfrak{gl}_∞* . Canad. Math. Bull. 46(2003), no. 4, 597–616. doi:10.4153/CMB-2003-056-1

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