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## 3 Lie algebra

The Lie algebra is discussed first in section 2.3, for  $K$ , and in section 2.4, for  $N$ . In section 3.1 is a discussion for the whole group  $SU(2,1)$ .

Here we discuss the Lie algebra elements and routines for the Lie group bracket directly in the context of the group  $G$ .

3a. Real Lie algebra

3b. Basis for the complex Lie algebra

3c. Check of exponentiation map

3d. Cartan subalgebras

3e. Universal enveloping algebra, routines

3f. Casimir element of  $K_0$

3g. Center of the enveloping algebra

3h. Iwasawa decomposition