

The Gauss Decomposition for the Group $SL(2, \mathbb{R})$ and Casimir Operator

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Abstract: We considered the Gauss decomposition for the Lie group $SL(2, \mathbb{R})$. The Casimir operator of the group and continuous state solution of the system were obtained. The Laplace-Beltrami operator on the surface of the manifold was given and the relation between the Casimir operator and the Laplace-Beltrami operator was observed.

Keywords: Lie group, Gauss decomposition, Casimir operator

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