

# Invariant symmetric diffusions on $SU(2)$

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## **Abstract**

We show that all Riemannian (and sub-Riemannian) invariant geometries on the compact group  $SU(2)$  are doubling, uniformly. Namely, there is a constant  $D$  such that, for any invariant Riemannian metric on  $SU(2)$ , the ratio of the Haar volumes of the balls of radius  $2r$  and  $r$  is at most  $D$ . We discuss the consequence of this theorem and its possible generalizations.