© 2019 Heldermann Verlag Journal of Lie Theory 29 (2019) 107–142

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Rigidity of Bott-Samelson-Demazure-Hansen Variety for $PSO(2n + 1, \mathbb{C})$

Let $G = PSO(2n + 1, \mathbb{C})$ $(n \ge 3)$ and B be the Borel subgroup of G containing maximal torus T of G. Let w be an element of Weyl group W and X(w) be the Schubert variety in the flag variety G/B corresponding to w. Let $Z(w, \underline{i})$ be the Bott-Samelson-Demazure-Hansen Variety (the desingularization of X(w)) corresponding to a reduced expression \underline{i} of w.

In this article, we study the cohomology modules of the tangent bundle on $Z(w_0, \underline{i})$, where w_0 is the longest element of the Weyl group W. We describe all the reduced expressions of w_0 in terms of a Coxeter element such that all the higher cohomology modules of the tangent bundle on $Z(w_0, \underline{i})$ vanish.

Keywords: Bott-Samelson-Demazure-Hansen variety, Coxeter element, tangent bundle.

MSC: 14M15