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Chow-Witt rings of classifying spaces for symplectic and special linear groups. (English)

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Summary: We compute the Chow-Witt rings of the classifying spaces for the symplectic and special linear groups. In the structural description we give, contributions from real and complex realization are clearly visible. In particular, the computation of cohomology with $\mathbf{I}^j$-coefficients is done closely along the lines of Brown's computation of integral cohomology for special orthogonal groups. The computations for the symplectic groups show that Chow-Witt groups are a symplectically oriented ring cohomology theory. Using our computations for special linear groups, we also discuss the question when an oriented vector bundle of odd-rank splits off a trivial summand.

MSC:

14C17	Intersection theory, characteristic classes, intersection multiplicities in algebraic geometry
19G12	Witt groups of rings
19D45	Higher symbols, Milnor K-theory
55R40	Homology of classifying spaces and characteristic classes in algebraic topology

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