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Asher N. Auel* (aue1a@math.upenn.edu), Mathematics Department, University of Pennsylvania, 209 S 33rd St., Philadelphia, PA 19104. *Characteristic classes and root numbers for motives associated to \mathbf{GO}_n* . Preliminary report.

The theory of root numbers plays an important role in the study of the functional equations of L -functions of motives and of modular forms. Deligne gave an interpretation of the local root numbers of orthogonal Artin motives in terms of the Stiefel-Whitney invariants of the associated local orthogonal Galois representations. These Galois theoretic Stiefel-Whitney invariants are also expressed, via formulas of Serre and Fröhlich, in terms of the classical Hasse-Witt invariants of certain quadratic forms attached to the motive. This talk is about a new construction of cohomological invariants, generalizing the Stiefel-Whitney and Hasse-Witt invariants, for motives associated to the group of orthogonal similitudes, \mathbf{GO}_n , and for the line bundle-valued quadratic forms attached to these motives. I will discuss some examples coming from arithmetic geometry as well as the connection of these new invariants to root numbers. (Received September 16, 2008)