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An explicit cycle map for the motivic cohomology of real varieties. (English) Zbl 1401.14036

Summary: We provide a direct construction of a cycle map in the level of representing complexes from
the motivic cohomology of real (or complex) varieties to the appropriate ordinary cohomology theory. For
complex varieties, this is simply integral Betti cohomology, whereas for real varieties the recipient theory
[Contemp. Math. 646, 19–40 (2015; Zbl 1346.14052)] we provide a sheaf-theoretic approach to ordinary
equivariant $RO(G)$-graded cohomology for any finite group $G$. In particular, this gives a complex of
sheaves $Z(p)_\omega$ on a suitable equivariant site of real analytic manifolds-with-corner whose construction
closely parallels that of the Voevodsky’s motivic complexes $Z(p)_M$. Our cycle map is induced by the
change of sites functor that assigns to a real variety $X$ its analytic space $X(\mathbb{C})$ together with the complex
conjugation involution.

MSC:
14C15 (Equivariant) Chow groups and rings; motives
14P15 Real-analytic and semi-analytic sets
55N91 Equivariant homology and cohomology in algebraic topology
32C30 Integration on analytic sets and spaces, currents
49Q15 Geometric measure and integration theory, integral and normal currents in optimization

Keywords:
ordinary equivariant cohomology; motivic cohomology; cycle map; finite analytic currents; real varieties

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