

Hodge Witt cohomology with modulus and duality

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The theory of cube invariant modulus sheaves developed by Kahn-Miyazaki-Saito-Yamazaki allows to define for any sheaf with transfers and any smooth k -scheme X with effective Cartier divisor D a sheaf whose sections over X can be interpreted as regular sections on the complement of D with pole order at infinity bounded by D . This construction is functorial and has a certain universal property, which makes it hard to compute explicitly. We apply it to the de Rham-Witt sheaves in positive characteristic p and show that in case the support of D has simple normal crossings these sheaves correspond under Grothendieck duality to de Rham Witt sheaves with zeros along D . From this we deduce refined versions of Ekedahl duality, Poincaré duality for crystalline cohomology, and Milne duality for motivic cohomology with p -primary torsion coefficients. This is joint work with Fei Ren.