

Meeting: 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-14-1308 **Karl-Dieter Crisman*** (kcrisman@gmail.com), 5250 S. Drexel #1E, Chicago, IL 60615. *Chow Groups of Zero-Cycles Relative to Hyperplane Arrangements.*

We present a new invariant for hyperplane arrangements \mathcal{A} which is simultaneously an alternate characterization of (additive) higher Chow groups of zero-cycles over a field.

Higher Chow groups over a field k are groups generated by certain well-behaved cycles, modulo a homological equivalence relation. In the zero-cycle case, by viewing the algebraic simplex Δ^\bullet as the arrangement defined by $x_0x_1 \cdots x_n(x_0 + x_1 + \cdots + x_n - 1)$, we obtain a natural definition of the subgroup of relations in terms of divisors of functions on curves. This connects higher Chow groups in a new way to the classical Chow groups.

Further, this subgroup of relations on zero-cycles defines a Chow group of algebraic cycles relative to *any* normal crossing divisor arrangement. In fact, we obtain Milnor K-theory $K^M(k)$ for so-called *polysimplicial* arrangements, which suggests a relation with the *other* alternate characterization of higher Chow groups as motivic cohomology. (Received October 04, 2004)