

# Nonproper intersection theory and generalized cycles

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I will discuss a joint work in progress with Mats Andersson, Dennis Eriksson, Håkan Samuelsson Kalm, and Alain Yger, which aims at giving an analytic approach to nonproper intersection theory.

Given two analytic cycles  $Z$  and  $W$  that intersect properly, there is a nice analytic interpretation of their intersection cycle as the product  $[Z] \wedge [W]$  of the currents of integration along  $Z$  and  $W$ .

To deal with the nonproper case we introduce a class of currents that we call generalized cycles and that contains all analytic cycles. Each generalized cycle has a well-defined multiplicity at each point and a well-defined degree. The intersection of two (generalized) cycles  $Z$  and  $W$  is a generalized cycle  $Z \bullet W$  whose degree satisfies Bezout's theorem. Moreover the multiplicities of  $Z \bullet W$  are the local intersection numbers in the sense of Tworzewski, Achilles-Manaresi, and Gaffney-Gassler.