

# Characteristic classes of singular varieties and some results about complete intersections

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In this talk, I consider two classical extensions for singular varieties of the usual Chern classes of complex manifolds, namely the total Schwartz-MacPherson and Fulton-Johnson classes,  $c^{SM}(X)$  and  $c^{FJ}(X)$ . Their difference (up to sign) is the total Milnor class  $\mathcal{M}(X)$ , a generalization of the Milnor number for varieties with arbitrary singular set. The first result is a Verdier-Riemann-Roch type formulae for the total classes  $c^{SM}(X)$  and  $c^{FJ}(X)$ , and these are used to prove a simple formula for the total Milnor class when  $X$  is defined by a finite number of hypersurfaces  $X_1, \dots, X_r$  in a complex manifold, satisfying certain transversality conditions. The formula expresses  $\mathcal{M}(X)$  explicitly in terms of the usual Chern classes of  $M$ , restricted to  $X$ , and the product of the Fulton-Johnson classes of the  $X_i$  minus that of the Schwartz-MacPherson classes. For  $r = 1$  this is just the definition of the class  $\mathcal{M}(X)$ . As applications I will show a Parusiński-Pragacz type formula and an Aluffi type formula for the Milnor class, and a description of the Milnor classes of  $X$  in terms of the global Lê classes of the  $X_i$ .