Index theorems for holomorphic maps and foliations

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ABSTRACT: In 1982, in their seminal paper [CS] on the existence of separatrices for holomorphic vector fields, Camacho and Sad proved an index theorem for a compact Riemann surface invariant under a (possibly singular) holomorphic foliation of an ambient 2-dimensional complex manifold. This theorem has been later generalized by Lehmann, Suwa and others (see, e.g., [Su]), to (possibly singular) subvarieties invariant under a (possibly singular) holomorphic foliation of an ambient n-dimensional manifolds. In this talk I shall present analogues of these index theorems found in [A, ABT] by F. Bracci, F. Tovena and myself for (possibly singular) subvarieties pointwise-fixed by a holomorphic self-map of an ambient n-dimensional manifold. The techniques we have developed give also rise to new index theorems for subvarieties transversal to a holomorphic foliation, generalizing recent results by Camacho-Lehmann and Camacho-Movasati-Sad.

References.

[A]   M. Abate: *The residual index and the dynamics of holomorphic maps tangent to the identity*. Duke Math. J. **107** (2001), 173–207.

[ABT] M. Abate, F. Bracci, F. Tovena: *Index theorems for holomorphic self-maps*. Ann. of Math. **159** (2004), 819–864.

[CS]   C. Camacho, P. Sad: *Invariant varieties through singularities of holomorphic vector fields*. Ann. of Math. **115** (1982), 579–595.

[S2]   T. Suwa: **Indices of vector fields and residues of singular holomorphic foliations.** Hermann, Paris, 1998.