SUPPORT SETS OF PAIRS OF MODULES

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ABSTRACT. Let R be the quotient of a local domain $(Q, \mathfrak{n})$ by a proper ideal minimally generated by $f_1, \ldots, f_c$. Assume $Q/\mathfrak{n}$ is algebraically closed, and let M and N be finitely generated R-modules. We show there is an algebraic set in c-dimensional affine space, called the support set of the pair (M, N), which describes those hypersurfaces $h \in (f_1, \ldots, f_c) - \mathfrak{n}(f_1, \ldots, f_c)$ over which there are infinitely many nonzero $\operatorname{Ext}^i_{Q/(h)}(M, N)$. This generalizes to arbitrary quotients of regular local rings the notion of support variety for modules over complete intersections.

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