ACM vector bundles on hypersurfaces

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An Arithmetically Cohen Macaulay vector bundle on a hypersurface X of projective space is a bundle E for which $H^i(X, E(a)) = 0$ for any integer a and any i between 1 and dim(X)-1. Indecomposable ACM bundles of rank > 1 exist on any smooth hypersurface. We will discuss constructions of such ACM bundles. Recent theorems indicate that ACM bundles of small rank should not exist on hypersurfaces of large dimension. We discuss work of Kleppe, Chiantini-Madonna and Kumar-Rao-Ravindra in this direction. In another direction, we discuss how ACM bundles produce subvarieties of X that are not cut out properly on X by a subvariety of projective space.