We are looking for a good definition for an almost complex subvariety. To interpret 'good', we borrow the concept of a Zariski-type structure from model theory.

We define a subset of a real analytic almost complex manifold to be a holomorphic shadow if it is the image of a J-holomorphic real analytic map from a compact complex manifold. We explore the logic structure in which the universes are the finite Cartesian products of a compact real analytic almost complex manifold \((M, J)\) and the closed sets are finite unions of finite products of holomorphic shadows and diagonals. We claim that this logic structure satisfies the axioms of a Zariski-type structure.

Our goal is to apply results from model theory to determine whether an almost complex structure is complex, given that the manifold admits a “large enough” family of J-holomorphic curves. (Received September 27, 2005)