

# The Brasselet-Schürmann-Yokura conjecture

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**Abstract:** The Brasselet-Schürmann-Yokura conjecture predicts the equality between the Hodge L-class and the Goresky-MacPherson L-class for compact complex algebraic varieties that are rational homology manifolds. This conjecture is the characteristic class version for rational homology manifolds of the Hodge index theorem that expresses the signature of compact complex algebraic manifolds in terms of their Hodge numbers. We prove the conjecture using the theory of mixed Hodge modules. This is a joint work with J. Fernández de Bobadilla and M. Saito. The particular case of projective varieties, can also be proved without using Hodge modules. This proof is based on cubical hyperresolutions, the decomposition theorem and classical Hodge theory. In this talk, we will discuss both proofs.