

**Studying codimension-2 cycles on surfaces and threefolds  
via Bloch's higher Chow groups, Hodge theory and deformation theory  
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For surfaces, the classical proof of Abel's theorem, applied to quaternionic line bundles associated to Albanese-trivial zero-cycles, gives an answer in Deligne cohomology which may help decide rational equivalence. For families of algebraic one-cycles on certain threefolds, Kuranishi theory applied to Noether-Lefschetz loci makes a plausible case for a variational version of the generalized Hodge conjecture.