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Specialization of cycles and the K-theory elevator

A general specialization map is constructed for higher Chow groups and used to prove a going-up theorem for algebraic cycles in the setting of nodal degenerations. The constructions are applied in two different directions. On the one hand, it is shown how the modified diagonal of Gross and Schoen on a non-hyperelliptic curve of genus three, which degenerates to a nodal curve, gives rise to a higher indecomposable cycle on a genus two curve. On the other hand, we also explore a similar phenomenon in the setting of normal functions and the image of the Abel-Jacobi map.