# Local Volumes and Deformations

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In this talk I will present a result that determines the change of the local volume of a Cartier divisor over a flat family of schemes parametrized by one-dimensional smooth base. The local volume is a far reaching generalization of multiplicity-type invariants like the Hilbert–Samuel multiplicity, but unlike them it may not be an integer. However, its change across a flat family turns out to be an integer: it is the degree of certain projective scheme associated with the Cartier divisor. This result generalizes those of Hironaka, Teissier, Kleiman and Gaffney among others who considered multiplicity-type invariants. I will discuss applications to equisingularity theory and if time permits to moduli problems.