Discretisation of integrals on compact spaces using distance functions

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For the purpose of partitioning compact sets, discretisation of integrals and finding quadrature rules on compact sets, it is important to have estimates for the ensuing error of the approximation. It is desirable to have estimates on the remainders that are independent of space dimension, and of course we wish the errors to decrease as fast as possible when the number of summands in the discretisation increases. In this joint work with Feng Dai and Yeli Niu (Edmonton) we find such error estimates using regular partitions with particular attention to (but not only to) discretisations on spheres. In fact, our estimates are quite general, they apply to compact pathconnected metric spaces, and we are able to improve several earlier error estimates from the literature.