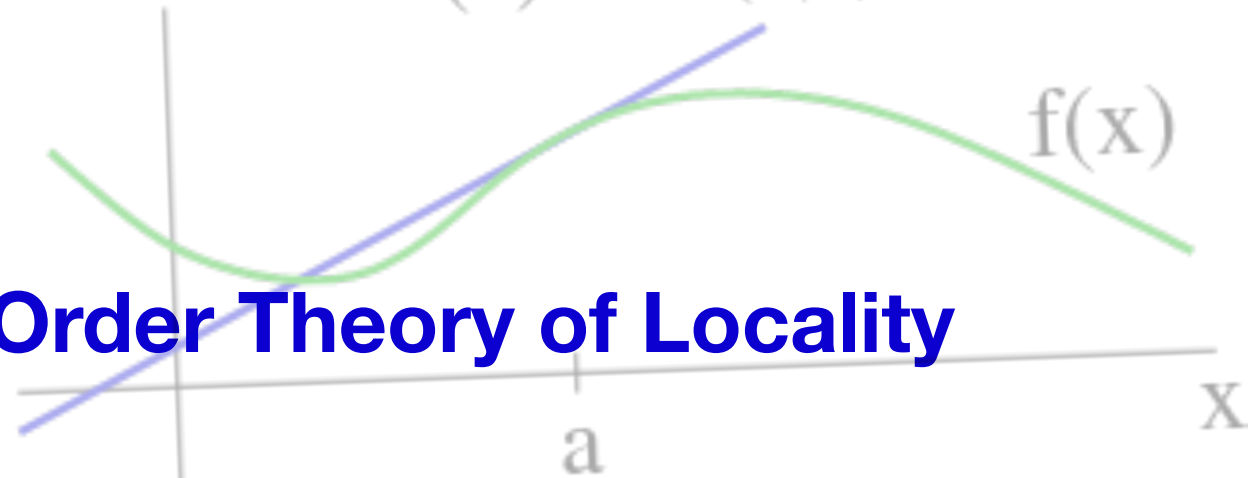




$$f(a) + f'(a)(x-a)$$



A Higher Order Theory of Locality

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MSPC 2012

locality function	formal property	useful characteristics
3rd order: footprint, lifetime	concave/ convex	linear-time, amenable to sampling, composable (dynamic locality)
2nd order: miss rate	monotone	machine specific, e.g. cache size/associativity (cache locality)
1st order: reuse distance	non- negative	decomposable by code units and data structures (program locality)