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Bei Wang* (beiwang@sci.utah.edu). *An Introduction to Discrete Stratified Morse Theory*.

Inspired by the works of Forman on discrete Morse theory, which is a combinatorial adaptation to cell complexes of classical Morse theory on manifolds, we introduce a discrete analogue of the stratified Morse theory of Goresky and MacPherson, referred to as the discrete stratified Morse theory (DSMT). We describe the basics of this theory and prove fundamental theorems relating the topology of a general simplicial complex with the critical simplices of a discrete stratified Morse function on the complex. We also provide an algorithm that constructs a discrete stratified Morse function out of an arbitrary function defined on a finite simplicial complex; this is different from simply constructing a discrete Morse function on such a complex. We then discuss on-going research efforts that connect DSMT with point cloud data, discrete dynamics, and visualization. This is a joint work with Kevin Knudson. (Received September 24, 2018)