Homological persistence via the lens of combinatorial Morse theory

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In 1998, in his seminal work on discrete Morse theory, R. Forman [4, 5] presented an alternative to classical, ODE based, models in dynamics. Namely, he introduced and studied a purely combinatorial analogue of a vector field and the associated flow. In 2002 H. Edelsbrunner, D. Letscher and A. Zomorodian [2] introduced the concept of topological persistence which became the foundation of topological data analysis [6, 1]. In my talk, based on research in progress with H. Edelsbrunner [3] I will present some recently developed bridges between the two theories.

References

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