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Stabilizing Auxiliary Persistence Information

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Persistent homology pairs critical values of a Morse function. These pairings are stable under perturbations of the Morse function, but the generically induced critical point pairings are unstable. A stable version of the critical point pairings can be obtained by convolving a corresponding real-valued function with an appropriate kernel. A continuous extension of this approach leads to a measure on the underlying manifold which reflects which parts of the manifold are responsible for a given region of the persistence diagram. This is work towards my PhD under the advisement of Dr. Peter Bubenik.