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**Peter Bubenik** and **Alexander Wagner\*** ([alexander.wagner@duke.edu](mailto:alexander.wagner@duke.edu)). *A Topological Heatmap for the Shape of Biological Images*. Preliminary report.

In this talk, I will present the topological heatmap, a novel visualization technique based on persistent homology. In combination with machine learning, the topological heatmap can highlight the parts of a biological image that were used for a classification task. The topological heatmap is constructed using additional information produced by the algorithm that computes persistent homology. This additional information, in the form of representative cycles and boundaries, is typically discarded because it is unstable to perturbations of the input and non-canonical. Nevertheless, because the topological heatmap changes linearly for a certain class of perturbations of the input, we are able to prove a stability result that is also observed empirically. This leads to a stable, useful visualization associated to persistent homology. (Received September 20, 2021)