1077-55-2042   **Peter Bubenik*** (`p.bubenik@csuohio.edu`). *Persistent homology and statistical inference.* Preliminary report.

Given (possibly high-dimensional) data that does not lend itself to linear analysis, one can calculate its persistent homology in an attempt to capture global qualitative structure. This persistent homology can be encoded in a persistence diagram. A sequence of such diagrams obtained from the starting data can be considered to come from persistence-diagram-valued random variables $X_1, \ldots, X_n$. I will discuss means, variances, laws of large numbers, and central limit theorems in this framework. (Received September 21, 2011)