1116-55-555 **Frederic Chazal*** (`frederic.chazal@inria.fr`), INRIA Saclay - Ile-de-France, Alan Turing Bldg, Campus Ecole Polytechnique, 1 rue Honoré d'Estienne d'Orves, 91120 Palaiseau, France. *Subsampling methods for persistent homology.*

Computational topology has recently seen an important development toward data analysis, giving birth to Topological Data Analysis. Persistent homology appears as a fundamental tool in this field. It is usually computed from filtrations built on top of data sets sampled from some unknown (metric) space, providing "topological signatures" revealing the structure of the underlying space. When the size of the sample is large, direct computation of persistent homology often suffers two issues. First, it becomes prohibitive due to the combinatorial size of the considered filtrations and, second, it appears to be very sensitive to noise and outliers.

In this talk we will present a method to overcome these issues by computing persistent diagrams from several subsamples and combining them in order to efficiently infer robust and relevant topological information from data. (Received September 07, 2015)