1154-55-822 **Yasuaki Hiraoka*** (hiraoka.yasuaki.6z@kyoto-u.ac.jp), Yoshida Ushinomiya-cho, Sakyo-ku, Kyoto, Kyoto 606-8501, Japan. *Limit theorems of persistent homology.*

The persistent homology of a stationary point process in a Euclidean space is studied in this talk. As a generalization of continuum percolation theory, we study higher dimensional topological features of the point process such as loops, cavities, etc. in a multiscale way. We prove the strong law of large numbers for persistence diagrams as the window size tends to infinity and give a sufficient condition for the support of the limiting persistence diagram to coincide with the geometrically realizable region. We also discuss the central limit theorem and the large deviation principle for persistent Betti numbers. Furthermore, a generalization to multi-parameter persistent homology is also studied in this talk. (Received September 11, 2019)