

# On the topology of higher-order age-dependent random connection models

## **Abstract:**

Preferential attachment is a popular mechanism for generating scale-free networks. While it offers a compelling narrative, the underlying reinforced processes make it difficult to rigorously establish subtle properties. Recently, age-dependent random connection models were proposed as an alternative that is capable of generating similar networks with a mechanism that is amenable to a more refined analysis. In this talk, we analyze the asymptotic behavior of higher-order topological characteristics such as higher-order degree distributions and Betti numbers in large domains. We demonstrate the practical application of the theoretical results to real-world datasets by analyzing scientific collaboration networks based on data from arXiv. This talk is based on joint work with Péter Juhász