

# Complexity of a Graphon and its Estimation

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Non-parametric approaches for analyzing network data based on exchangeable graph models have recently gained interest. The key object that defines an exchangeable graph model is often referred to as a graphon. This non-parametric perspective on network modeling poses challenging questions on how to make inference on properties of the graphon underlying observed network data, especially because the graphon estimation can be an ill-defined problem which requires strong structure hypothesis. In this talk, I propose a computationally efficient procedure to evaluate the complexity of a graphon from an observed network generated from it. This method is based on an approximation of a fractal dimension : the Minkowski-Bouligand dimension. I prove consistency of complexity estimation without any condition on the graphon structure.

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