

## **Subsampling Large Graphs and Invariance in Networks**

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Suppose a large network is modeled as a random graph, and a sample subgraph of the network is observed. Is it possible to recover any properties of the underlying random graph from this sample? I will show how this problem can be characterized if the data acquisition process is modeled as a random subsampling algorithm. One specific choice of this algorithm leads to the popular graphon models and to exchangeable random graphs. More generally, a subsampling algorithm defines a notion of probabilistic invariance; under suitable conditions on the data acquisition process, a law of large number guarantees that properties of the underlying random graph can indeed be recovered from data.