Statistical Properties of Sampled Networks SANG HOON LEE,
PAN-JUN KIM, HAWOONG JEONG, Department of Physics, KAIST — We study
the statistical properties of the sampled scale-free networks, deeply related to the
proper identification of various real-world networks. We exploit three methods of
sampling, and investigate the topological properties such as degree and betweenness
centrality distribution, average path length, assortativity, and clustering coefficient
of sampled networks compared with those of original networks. It is found that the
quantities related to those properties in sampled networks appear to be estimated
quite differently for each sampling method. We explain why such a biased estimation
of quantities would emerge from the sampling procedure, and give appropriate cri-
teria for each sampling method to prevent the quantities from being overestimated
or underestimated.

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