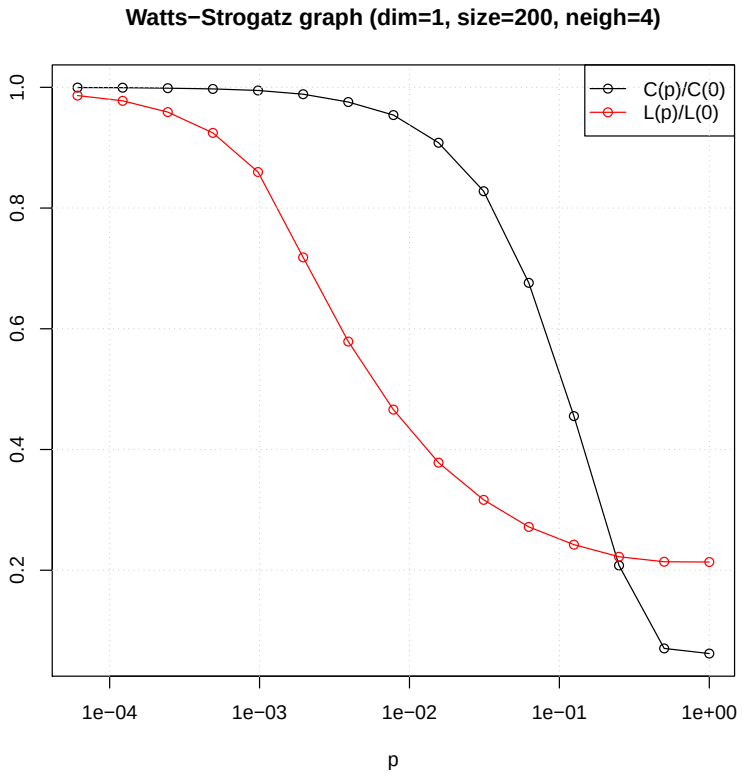
Lab 1: Introduction to `igraph`

October 3, 2017

1 Watts–Strotgatz model

The clustering coefficient $C(p)$ and average shortest path $L(p)$ are computed for a Watts–Strotgatz graph with dimension 1, size 200, 4 neighbours and probability p. Each probability is computed as $p = 2^{-i}$ with $i \in \{0, 14\}$ (as a logarithmic scale is used). The mean values of 100 random graphs is performed to reduce the variance. Also, both are scaled between 0 and 1 to be compared using a graph with $p = 0$ as $C(p)/C(0)$ and $L(p)/L(0)$.



2 Erdös–Rényi model

The average shortest path is ploted against the number of nodes n of a Erdös–Rényi graph. The probability is set as $p = \ln(n)/n$ to keep the graph connected. The mean values of 10 random graphs are computed to reduce the variance. The number of nodes is kept up to 10000, to maintain a reasonable computing time, with $n \in \{500, 1000, \ldots, 10000\}$.