

Non-linear Dynamics in Small World and Scale Free Networks

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Wave propagation, self-trapping and transport properties in non-linear complex networks [1] are investigated. The structure complexity is introduced by the use of Small World [2] and Scale Free networks [3]; these two types of networks can be found quite often and in very different scientific areas. In that framework, I will present a non-linear dynamical study which incorporates the competition of bond and on site energy disorder, long range interaction and non-linearity for wave propagation. The Discrete Non-linear Schrödinger (DNLS) equation is used for this studies as it is a prototypical equation with a large number of applications in condensed matter physics, optics, etc. [4]

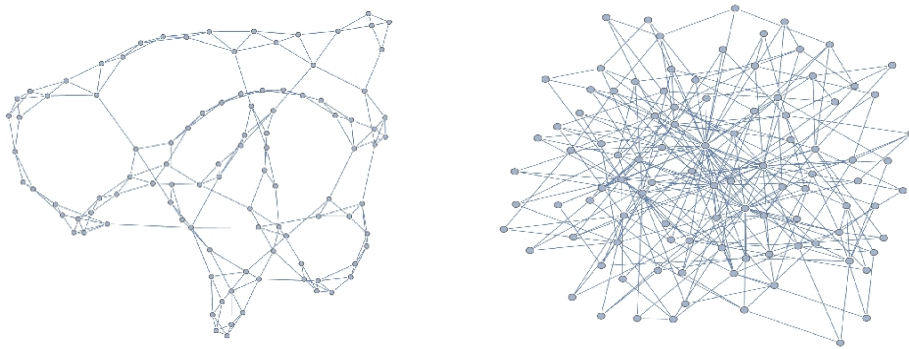


Figure 1: On the left is a Small World network with 100 nodes and 200 bonds. On the right is a Scale Free network with 100 nodes and 285 bonds.

References

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