

# Robustness of Networks

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The Internet, protein interactions or social organizations are examples for complex networks. Such networks typically cease to be operational when they fall apart in disconnected pieces. This can be desired as in the case of criminal networks or should be avoided for instance in the case of communication systems. Destruction can happen randomly or due to a malicious attack. I will present various strategies of optimizing the robustness of networks preserving some of their properties as for instance their degree distribution. Artificial networks like the Apollonian network can serve to systematically investigate the optimization process. The optimized networks exhibit a novel "onion-like" topology. Applications to power networks, botnets, road systems and brain models will be discussed.