

Part I

Theoretical Approaches

This part of the book is devoted to the theoretical approaches to interdependent networks. The state of the art of such a novel and dynamic field is experiencing a continuous growth. Here we have selected, mainly for historical reasons, the contributions stemming from the Statistical Physics approach.

Modelling interdependent networks consists in defining different graphs and the interactions among them. In the multiplex approach, the different layers are modelled by means of different types of links. In the interacting networks approach, the different layers are explicitly modelled as separate networks and the links among them represent the inter-layer interactions.

In [Chaps. 1–3](#) authors rely on ‘static’ approaches aimed at assessing the robustness and/or the resilience of interdependent systems upon both random failures and targeted attacks. Considering the dynamics of the systems upon continuous stressing leads to the introduction of further effects discussed in [Chaps. 4 and 5](#)