Probabilistic Stability in Power Grids

Literature

The complexity and stability of ecosystems.
Pimm, S. L.
Nature 307.5949 (1984): 321-326.

Master stability functions reveal diffusion-driven pattern formation in networks.
Brechtel, A., et al.
Physical Review E 97.3 (2018): 032307.
`https://arxiv.org/abs/1610.07635`

Please also find additional literature.

Topic

The network aspects of ecosystems and the species that interact with them have been sutdied for over 30 years.
The Brechtel et.al. paper extends classic foodweb models by a spatial dimension. It considers spatially separated networks of interacting species that are interacting by diffusion. Breakdown of the stability of the homogeneous state leads to pattern formation.

- Explain Foodwebs and the modeling of ecological networks
- Explain the spatial aspects and pattern formation introduced in the latter paper
- Show the interplay of non-linear and lienar phenomena in this context