1116-55-1110　　　**Sophie Raynor***, s.raynor@abdn.ac.uk. *Formal Perspectives on Hierarchical Networks.*

In applications ranging from neuroscience, to business, to ecology, and many more, there is an increasing need to understand hierarchical structures of complex networks. My work aims to develop a rigorous mathematical formalism that captures the structure and function of complex networks at multiple spatio-temporal scales in one single model. This formalism should enable us to use information from one scale to understand structure at another, and, eventually, to make predictions about behaviour of the system at all scales.

I will present three different perspectives of networks carrying a hierarchical structure (clustering at multiple levels) and explain how each viewpoint plays a different role in our understanding of this structure. If there is time, I will discuss how we can start to understand (non-deterministic) processes on such networks. (Received September 17, 2015)