

Neuronal network plasticity and homeostasis - implications for neuroprosthetics

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Interfaces between brains and machines are facing a challenge, because neural circuits can undergo changes on multiple timescales. Neuronal networks show both plasticity and stability, the former in order to encode information and store memories, and the latter in order to maintain network activity in a functional range. Both plasticity and stability mechanisms operate at the cellular, synaptic, and network levels. I will describe recent findings on the mechanisms of network stability and homeostasis, and will speculate on the implications of these findings for the design and function of neural prostheses.