

Neuromorphic dynamics and information processing in self-organised nanowire networks

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Inorganic nanowires that self-organise into a complex network architecture produce brain-like dynamics when electrically stimulated. The interplay between network connectivity structure and synapse-like nanoscale electrical junctions between the nanowires results in emergent collective dynamics, such as avalanche criticality, first-order phase transitions and switching synchronisation. I will briefly describe these neuromorphic dynamics and how they can be harnessed for information processing. Key results include demonstration of optimal learning at the edge-of-chaos and of working memory based on the n-back task from cognitive neuroscience.