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Linh Huynh* (huynh.134@osu.edu). *Analyzing Sleep-Wake Transitions.*

Contrary to the common perception that sleep is continuous, sleep is actually fragmented by brief awakenings throughout the night—even in healthy people. This work analyzes transitions between sleep and wake states in rat electromyography data with the aim of gaining understanding of fundamental mechanisms in sleep cycle dynamics. Types of transitions are identified by applying variants of hierarchical clustering methods, and probabilities of transition occurrences are determined using hidden Markov models. The identification of multiple types of transitions with distinct dynamical features, in comparison with activity in mathematical models of bistable neuronal networks, suggests hypotheses regarding activity in the neuronal network responsible for regulating sleep and wakefulness. (Received September 16, 2016)