

NEURAL ENGINEERING SEMINAR SERIES

Modeling sleep-wake regulation: Circadian and homeostatic influences on sleep behavior

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W306 Millennium Science
Complex



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ABSTRACT:

Transitions between sleep and wake states are regulated by the interactions among a number of brainstem and hypothalamic neuronal populations. The timing of these transitions is strongly modulated by the 24 h circadian rhythm and the homeostatic sleep drive. We have been developing and analyzing mathematical models of sleep-wake regulatory networks to understand how the interaction of these processes dictate the timing and durations of sleep and wake episodes. In this talk, I will discuss recent results modeling the recovery in NREM and REM sleep durations following sleep deprivation and modeling developmental transitions in sleep in young children.

BIOGRAPHY:

Dr. Victoria Booth is a Professor in the Department of Mathematics and Associate Professor in the Department of Anesthesiology at the University of Michigan. Her research uses mathematical modeling to gain insight to the workings of the brain, with the goal of helping to reveal and understand the physiological mechanisms generating experimentally observed brain and neural activity. She received her BA from Smith College and conducted her graduate studies at Northwestern University in Applied Mathematics. After a postdoctoral fellowship at the National Institutes of Health, she was on the faculty in the Department of Mathematical Sciences at the New Jersey Institute of Technology.