

Friday, April 26th
4:10 – 5:00 PM
Roberts 101

Should We Sleep More? A Physics-Based Argument

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Abstract: Brain health and performance ranging from cognition to neurodegeneration have been linked to efficient clearance of molecular waste from the brain. The brain looks to have a rapid and anatomically organized system for molecular transport, the glymphatic system, that is in the early stages of being understood and may rely on healthy sleep for optimal function. In the presented work, transport models are applied to current experimental data to quantify fundamental parameters describing glymphatic function. As glymphatic study moves from mice to humans, minimally invasive imaging techniques present challenges and opportunities. Human MRI data from hourly scans up to 22 hours post intravenous (IV) gadobutrol contrast (GBC) infusion are analyzed from two complimentary perspectives: a system-wide approach utilizing compartment modeling (CM) and a brain-tissue-focused approach using physics-informed neural-network models (PINN).

Host: Anton Vorontsov

** Refreshments served in the Barnard second floor atrium at 3:45. **