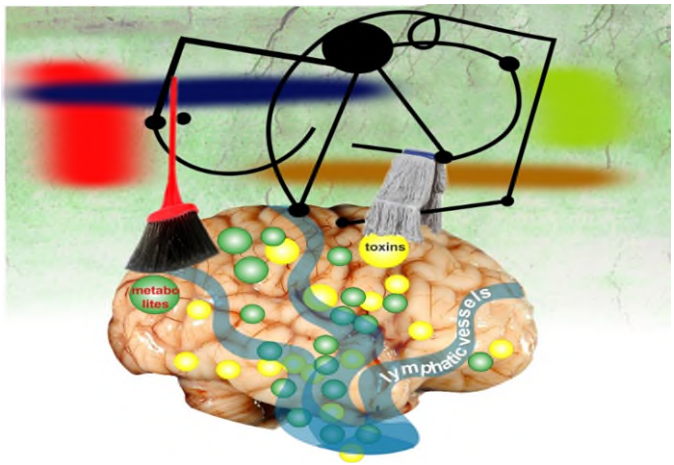
Special issue "Breakthrough optics- and complex systems-based technologies of modulation of drainage and clearing functions of the brain" in The European Physical Journal: Special Topics https://epjst.epj.org/



Aims and Goals

There is intensive grow body of evidance that the lymphatics plays an crucial role in the keeping the health of the central nervous system (CNS) via the drainage of CNS tissues and clearance of metabolites and neurotoxins. The ability to stimulate the lymph flow in the sleeping brain is likely to play an important role in developing innovative methods in neurorehabilitation therapy. However, the scanty information available about the mechanisms of lymphatic clearance of waste products and toxins from the brain slows down progress in the appearance of technologies for therapeutic modulations of the lymphatics in the CNS.

This special issue is focused on the development and application of modern approaches from photonics and complex systems science to design promising strategies in stimulation of the cerebral lymphatics and development of breakthrough technologies for non-invasive and real time analysis of brain drainage and clearing functions. We strongly believe that this pioneering step will motivate researchers and industrial parners to create the novel promising devices for neurorehabilitaion medicine based on the stimulation of cerebral lymphatic functions.

The scope of the current special issue covers lymphatic-related topics that includes, but not limited:

- Lymphatics of the Central Nervous System, Head and Neck Lymphatics
- Sleep as natural factor for activation of the brain fluid drainage
- Biophysics of lymphatic transport
- Multi-modal technologies
- Nonlinear time series and machine learning methods
- Modeling of sleep wake transitions, of sleep stages and sleep wake mechanisms
- Computational blood/lymph flow models and lymph flow patterns
- Theoretical models of contractile waves in a multi-lymphangion vessel networks
- Modulations of the cerebral lymphatic functions
- Transcranial optical, electrical, and magnetic stimulation of lymphatics

Authors are invited to submit their original research and short reviews on the theme of this special issue. Manuscripts should be prepared following the instructions for authors https://www.epj.org/images/stories/instructions/instructions_epjst.pdf using the latex template of EPJ ST, which can be downloaded from ftp://ftp.edpsciences.org/pub/epj-spec/. Articles should be submitted to the Editorial Office of EPJ ST via the submission system at https://articlestatus.edpsciences.org/is/epjst/home.php by selecting "Breakthrough optics- and complex systems-based technologies of modulation of drainage and clearing functions of the brain" as special issue

Submission Deadline**: September 30, 2020**

We are looking forward to your contributions.

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