

Aging transition in systems of oscillators with global distributed-delay coupling

Yuliya Kyrychko¹

¹*Department of Mathematics, University of Sussex, BN1 9QH, United Kingdom
(e-mail: Y.Kyrychko@sussex.ac.uk)*

In this talk I will introduce a globally coupled neural network, consisting of active (oscillatory) and inactive (nonoscillatory) oscillators with distributed-delay coupling. I will show how the conditions for aging transition, associated with suppression of oscillations, are derived for uniform and gamma delay distributions in terms of coupling parameters and the proportion of inactive oscillators. The results suggest that for the uniform distribution increasing the width of distribution for the same mean delay allows aging transition to happen for a smaller coupling strength and a smaller proportion of inactive elements. Furthermore, for gamma distribution with sufficiently large mean time delay, it may be possible to achieve aging transition for an arbitrary proportion of inactive oscillators, as long as the coupling strength lies in a certain range [1].

- [1] Rahman B., Blyuss K. B., Kyrychko Y. N., Aging transition in systems of oscillators with global distributed-delay coupling, *Physical Review E* **96**:032203, 2017.