

Aleksander Weron

WROCLAW UNIVERSITY OF TECHNOLOGY

e-mail: `aleksander.weron@pwr.wroc.pl`

Identification of fractional subdiffusive dynamics of mRNA molecules

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Krzysztof Burnecki and Aleksander Weron

Hugo Steinhaus Center, Institute of Mathematics and Computer Science, Wrocław University of Technology, Wyspińskiego 27, 50-370 Wrocław, Poland

In this talk we propose a statistical methodology how to distinguish between three mechanisms leading to single molecule subdiffusion, [1-2]. Namely, fractional Brownian motion, fractional Levy stable motion and Fractional Fokker-Planck equation. We illustrate step by step that the methods of sample mean-squared displacement and p-variation can be successfully applied for infinite and confined systems. We already identified fractional subdiffusive dynamics on biological data describing the motion of individual fluorescently labeled mRNA molecules inside live *E. coli* cells [3-5], but it may concern also many other biological experimental data.

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