COLLOQUIUM

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14:00 – 15:00

The Meeting Room, Building 130
Optics and Fluid Dynamics Department
Risø National Laboratory
DK-4000 Roskilde

From Subdiffusion to Superdiffusion in Living Cells

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Abstract

We study the viscoelastic behavior of the cytoplasm of fission yeast cells by monitoring the motion of lipid granules in the cells. We use two independent methods: optical tweezers and single particle tracking. Lipid granules in living cells perform subdiffusive motion at all time scales from 0.0001 seconds up to 100 seconds. This behavior is probably due to the actin network and membranous structures in the cytoplasm. However, at times longer than 0.1 seconds other modes of motion, namely Brownian motion, directed and confined motion, are observed in a fraction of lipid granules. This result suggests that the viscoelastic properties of the intracellular environment are highly inhomogeneous in space and time.

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