Particle tracking in 3D confocal microscopy

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Abstract. Brownian motion is a well-known, apparently chaotic motion affecting microscopic objects in fluid media. The mathematical and physical basis of Brownian motion have been well studied but not often exploited. In this article we propose a particle tracking methodology based on mathematical morphology, suitable for Brownian motion analysis, which can provide difficult physical measurements such as the local temperature and viscosity. We illustrate our methodology on simulation and real data, showing that interesting phenomena and good precision can be achieved.

Keywords: Random walk, particle suspension, particle tracking, segmentation.

1 Introduction

2 Particle tracking

We now wish to exploit the potential of Brownian motion for physical measurements

2.1 Simulations

3 Results on real data

4 Conclusion

In this article we have shown