

STATISZTIKUS FIZIKA SZEMINÁRIUMOK

2018. szeptember 5.
szerda, 11.00
ELTE TTK Északi Tömb 2.54

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Colonization of moving marine aggregates by bacteria

Marine environments are very heterogeneous and turbulent on a small scale. In these highly dynamic conditions one can find isolated islands of nutrients with concentrated microbial activity. Marine aggregates (a.k.a. marine snow) are one example of such hot spots for microbial colonization. The local bacterial concentrations around and on marine snow particles exceed the background concentration by several orders of magnitude. Efficient motility and food detection is crucial for survival of marine bacteria in a constantly changing environment. In this work we analyse how different types of motility patterns of bacteria can influence the colonization of moving food particles in a flow field. To this extent we develop an individual-based model, where bacteria are described as active spheroid particles, which swim along their principal axis while advected by an externally imposed flow. In addition the swimming direction is affected by the presence of nutrients, allowing the swimmers to move along chemical gradients. With this theoretical model we compare the efficiency of three types of motility patterns adopted by bacteria on tracking a moving nutrient plume in different kinematic flow fields.

1117. Budapest, Pázmány Péter sétány 1/A (Északi tömb)
2.54-es szoba

<http://glu.elte.hu/~statfiz/index.html>
<https://www.kfki.hu/elfrfsz/szem.html>