



# Research Training Group 1962

*Dynamic Interactions at Biological Membranes from Single Molecules to Tissue*

Speaker: Prof. Dr. Rainer Böckmann, Computational Biology

Invitation to

RTG 1962 – Guest Talk

**Tuesday, 20<sup>th</sup> of June 2017 at 17.00 p.m. (s.t.)**

**Prof. Dr. Matthew Turner**

(Warwick University; <http://homepages.warwick.ac.uk/~phscz/>)

**“Membranes, active matter and collective motion”**

*I will present an overview of our recent research on the physics of membranes, active materials and collective motion, highlighting where these three themes overlap. Membranes are ubiquitous in living cells but many questions remain outstanding. These include how membrane proteins insert, how to characterise a membrane's material properties and how membrane microphase separation might be controlled. Living membranes are generically out of equilibrium and I will discuss our work to understand the regulation of organelles, which are membrane bound machines within cells that are essential for life and are implicated in numerous diseases. Recently there has been an explosion of interest in so-called “active matter”, systems that harness energy from external fields (concentration, temperature etc) or chemical fuel (hydrogen peroxide ATP or GTP etc). They offer access to a greatly expanded class of materials that have novel properties related to their self-motility and ability to sense their surroundings and undergo active assembly (potentially with error correction). I will give examples ranging from molecular motors and active membrane pumps to collective motion in animal systems (swarms), concluding with our recent attempts to connect swarming with a principle that might underlie general AI.*

**Guests are welcome!**

*signed Prof. Dr. R. Böckmann*

→ Venue: **Lecture Hall F**, Staudtstraße 5, 91058 Erlangen