

# Eugene Wigner Colloquium

*event of SFB 910*



## Vasily Zaburdaev

Friedrich-Alexander Universität Erlangen-Nürnberg

### Understanding bacterial colonies as active materials

Cellular aggregates are common in many biological settings, ranging from bacterial biofilms to organoids and tumors. Individual cells, as building blocks of these aggregates, are intrinsically active and are able to exert forces on their environment resulting in cell motility and cell aggregation. Many bacterial species use long flexible and retractile filaments called type IV pili to attach to surfaces and interact with other cells. Cycles of growth, attachment, retraction and detachment of the pili is the central active force generation mechanism that mediates cell motility and colony formation. In this talk, using *Neisseria gonorrhoeae* bacteria as a model example, we will go all the way from describing the motility of individual cells to the material properties of colonies in theory, numerical simulations, and experiments. We will see how the process of colony formation can be understood as an active phase separation phenomenon, and how the dynamics of pili forces turnover determines the viscoelastic behavior bacterial aggregates. With our accumulated knowledge we are approaching the point where the rheological properties of complex living materials could be put into the rigorous theoretical framework and also tested experimentally.

The Colloquium will take place online via Zoom. For information on how to access the event, please contact: [henning.reinken@itp.tu-berlin.de](mailto:henning.reinken@itp.tu-berlin.de)

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Technische Universität Berlin · Institut für Theoretische Physik · Hardenbergstraße 36 · 10623 Berlin

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