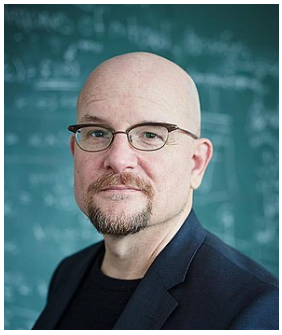
TECHNISCHE UNIVERSITÄT DRESDEN

School of Science Faculty of Physics

PHYSICS COLLOQUIUM

Speaker:

Prof. Dirk Brockmann
Departments of Biology & Physics, Humboldt University of Berlin and Projectgroup Computational Epidemiology, Robert Koch Institute, Berlin



Topic:

Networks, Complexity and Digital Epidemiology - A physicists perspective on COVID-19

Time and place:

Tuesday, November 22, 2022, 4:40 pm – hybrid event
The colloquium will be held in REC/C213.
Online participation possible:
Zoom-Meeting: Meeting-ID: 631 3817 8900 / passcode: PK-WiSe22
https://tu-dresden.zoom.us/j/63138178900?pwd=RVVZM3N4azdmNmVJQ2RWUTZ0TkhXdz09

Host:

Prof. Marc Timme

Abstract:

In early 2020 the SARS-CoV-2 virus started spreading around the globe, unfolding the COVID-19 pandemic that continues to put a significant burden on public health today. The pandemic is a dynamic phenomenon that unfolds on many levels and scales, it cannot be viewed as a virological and medical phenomenon alone. Risk perception, behavioral changes, politics, economics and cultural variation are all factors that shape the dynamics of the pandemic locally, regionally and globally. Complexity science, network science and digital data science are key methodological elements that can be an integrative glue that connects traditionally disconnected applied fields, natural sciences, social sciences and medical sciences, that are entangled in the pandemic. I will discuss how a physicist's perspective can help here, how network science is fundamental for our understanding of the COVID-19 pandemic, how feedback mechanisms between disease dynamics and interventions can be understood and how new digital citizen science projects can help us mitigate pandemics of the future.

Bio:

Dirk Brockmann is Professor in the Departments of Biology and Physics at Humboldt-University of Berlin. He also directs a research team at the Robert Koch Institute, Germany's federal Institute for public health. Between 2007-2013 he was Professor for Applied Mathematics at Northwestern University. At Northwestern University he was on the faculty of Northwestern's Institute on Complex Systems where he still holds an external faculty position.

A theoretical physicist by training, his research focuses on complex systems at the interface of physics, life sciences and social sciences. He is particularly interested the application of dynamical systems theory, stochastic processes and network science to infectious disease dynamics and

related contagion processes. In this context he is currently investigating dynamical processes on time-dependent networks, complex contagion processes and the emergence of cooperation in evolutionary processes. He is known for his work on human mobility and its role on the global spread of infectious diseases.