



# Einladung

zu dem am Donnerstag, dem 27. Juni 2019, ab 14 Uhr  
im Geo-Bio-Hörsaal,  
Zülpicher Straße 49, 50674 Köln

stattfindenden öffentlichen

**wissenschaftlichen Habilitationsvortrag**  
(Theoretische Physik, Institut für Biologische Physik / FZ Jülich)  
von

**Dr. María Soledad Ripoll Hernando**  
über das Thema

## **Collective swarming of living organisms**

Almost every living system consisting of at least dozens of individuals displays an apparently orchestrated behavior, which can become really spectacular in very diverse manners. Flocks of starlings with hundreds, or up to many thousands members, can fly as a uniform group with a dynamically changing shape, which will also collectively change direction, and exhibit interesting effects such as darkening waves. Schools of fish can move in a rather orderly fashion, and change direction amazingly abruptly, or swirl like a strongly stirred fluid in the presence of a predator. In the case of extremely low temperatures, emperor penguins organize themselves in very compact huge huddles which displace with internal characteristic waves and rotation motion. Although not completely intuitive, it is now widely accepted that the emergence of these spontaneous self-organization is not due to the presence of any leader, but due to the existence of clear simple rules susceptible of mathematical modeling.

G. Schwarz  
Dekan