WWU
MÜNSTER

FACHBEREICH 10
MATHEMATIK UND INFORMATIK
Prof. Dr. Xiaoyi Jiang
Dekan

12.05.2022

E i n l a d u n g

zu der am Mittwoch, den 18. Mai 2022,
um 11:00 Uhr im Hörsaal M5 stattfindenden

A n t r i t t s v o r l e s u n g

von Frau Juniorprofessorin Dr. Theresa Simon

über das Thema

„Nonlocal isoperimetric problems"

Kurzfassung: The classical isoperimetric problem, which has been known since antiquity, asks for a body with the least surface area given its volume. Comparatively recently, about 100 years ago, a nonlocal version of the problem arose in the form of Gamow's liquid drop model for atomic nuclei, in which minimization of surface area provides a proxy of short range attraction and competes with the repulsive Coulomb interaction of positively charged particles. The shape and stability properties of the nuclei are then thought to arise from a balance of the two terms.

However, also other repulsive nonlocal interactions may be considered, such as dipolar or screened Coulomb repulsion. In suitable asymptotic regimes, these can be seen to localize to repulsive interactions on the boundary of the set which to leading order exactly cancel the attractive effect of area minimization. Therefore, one has to go to next order to obtain a good effective model. In my talk, I will show how to do so in the examples mentioned above and demonstrate that the nature of the problems change from minimizing surface area to minimizing different notions of curvature.

gez. Xiaoyi Jiang, Dekan