Modeling vaccination hesitancy

For several diseases, the vaccination coverage is decreasing (see, e.g., measles). Most likely, the background is a high vaccination coverage in the past, leading to a low prevalence of the disease, in connection with natural idleness, and - not to forget - filter bubbles in social media.

Models that address vaccination hesitancy do not use elaborate models for the social aspects. This project aims to improve existing models in combining an SIR type model with vaccination (in line with the existing hesitancy models) with a model that focuses on the effect of filter bubbles and reinforcement.

**Plan:**

a) Understand the model idea for hesitancy (and explain that in your theses)

b) Understand the model for filter bubbles, in particular the deterministic limit (and explain that in your theses)

c) Combine the two models and perform a bifurcation analysis.

Literature:

[1] Wang, Dynamics of social learning in vaccination, BA Theses, TUM, 2019.

[2] Müller, Models in Social sciences, section 2.3.6 / deterministic limit,

lecture notes, TUM, 2020.

Anmeldung der Arbeit bis 1./15. April als PDF an bachelor@ma.tum.de