

## Einladung zum Vortrag im Oberseminar Analysis

### ***A numerical approach for solving SIR epidemic models***

Burcu Gürbüz  
Johannes Gutenberg-University Mainz,  
Üsküdar University, Istanbul, Turkey  
[burcu.gurbuz@uni-mainz.de](mailto:burcu.gurbuz@uni-mainz.de)

Fachbereich 08  
Physik, Mathematik  
und Informatik

Institut für Mathematik

Prof. Dr. Alan Rendall

Johannes Gutenberg-  
Universität Mainz  
Staudingerweg 9  
55128 Mainz

Fon +49 6131-39 22269

Fax +49 6131-39 20949

[rendall@uni-mainz.de](mailto:rendall@uni-mainz.de)

Recently, many approaches have been introduced for modeling the spread of epidemics on networks. Particularly, a well-known Susceptible/ Infected/ Recovered (SIR) compartmental model has been applied to different types of diseases which directly indicates the changes in the population densities of Susceptible ( $S$ ), Infective ( $I$ ), and Recovered ( $R$ ) individuals. In this study, the dynamics of SIR epidemic model is studied with a numerical approach. An algorithmic technique is introduced with an error analysis and its validity is described. Furthermore, the capability of the method is shown by numerical simulations. Consequently, the study is concluded by discussion of the results and an outlook on future works.

Keywords: Epidemic models, collocation methods, Laguerre polynomials.

2010 Mathematics Subject Classification: 92D99, 65L60, 33C45.

Alle Interessierten sind herzlich eingeladen.

**Zeit:** Donnerstag, 31. Oktober 2019, 14.15 Uhr

**Ort:** Raum 04-522