A U S H A N G

FREIE UNIVERSITÄT BERLIN
Fachbereich Mathematik und Informatik

Promotionsbüro, Arnimallee 14, 14195 Berlin

D I S P U T A T I O N

Donnerstag, 12. September 2013, 10.00 Uhr

Ort: Takustr. 9, 14195 Berlin, Seminarraum 005

Disputation über die Doktorarbeit von

Herrn Dany Pascal Moualeu-Ngangue

Thema der Dissertation:
A Mathematical Tuberculosis Model in Cameroon

Thema der Disputation:
Positive Dynamical Systems

Die Arbeit wurde unter der Betreuung von **Prof. Dr. Dr. h. c. P. Deuflhard** durchgeführt.

Abstract:

Dynamical systems in which the state variables are constrained to remain nonnegative, are of fundamental importance to numerous application areas, for instance chemical process industry, economic systems, and biological systems. Nonnegative systems have attracted considerable attention over several decades.

Historically, the theory of positive linear time-invariant (LTI) systems has been of great importance in systems theory and has been applied in the study of a wide variety of dynamical systems. There is a well developed theory of positive LTI systems, with roots in the Perron-Frobenius theory of nonnegative matrices. Extensions of Perron-Frobenius theory have been developed for Metzler matrices and compartmental matrices. Based on these results, some properties such as stability, existence of equilibrium and their location for nonnegative LTI systems have been extended to important classes of nonlinear nonnegative and positive systems such as homogeneous cooperative systems and Kolmogorov type systems.

This talk will discuss different classes of positive linear and nonlinear systems and issues concerning stability and existence and location of equilibria.

Die Disputation besteht aus dem o. g. Vortrag, danach der Vorstellung der Dissertation einschließlich jeweils anschließenden Aussprachen.

Interessierte werden hiermit herzlich eingeladen

Der Vorsitzende der Promotionskommission
Prof. Dr. Dr. h. c. P. Deuflhard