

# Estimation of the Domain of Attraction for Nonlinear Autonomous Systems using a Bezoutian Approach

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**M.Sc, Thomas Pursche**

**Faculty of Electrical, Information and  
Media Engineering,  
Bergische Universität Wuppertal**



## Abstract

One of the central subjects in modern control engineering is the investigation of stability for arbitrary given nonlinear systems. In this talk I will introduce a novel method to compute the domain of attraction (DA) of a polynomial system using bezoutians and the theorem of Ehlich and Zeller. The mathematical theory as well as the proof will be presented in this talk. The presented method is able to estimate the DA for a given linear system as well as a nonlinear system. It works for quadratic Lyapunov function as well as for arbitrary non linear Lyapunov functions. As a result an estimation for the DA is given by an upper and a lower bound.