

# Kernel methods for differential equations

Christian Rieger  
University of Bonn  
`rieger@ins.uni-bonn.de`

We present how kernel methods and in particular radial basis functions can be employed for solving differential equations. We discuss different approaches such as symmetric and non-symmetric methods and highlight their differences. In particular, we present recent approaches for an error analysis. Furthermore, we present connections of such numerical schemes for solving differential equations to Gaussian process regression. This makes such kernel-based schemes also favorable for differential equations with stochastic coefficients. We will present the interplay of the numerical scheme with the stochastic coefficients.