



Some explicit solutions of c -optimal design problems for polynomial regression with no intercept

Holger Dette¹ · Viatcheslav B. Melas² · Petr Shpilev²

Received: 30 April 2019 / Revised: 16 August 2019 / Published online: 7 November 2019
© The Institute of Statistical Mathematics, Tokyo 2019

Abstract

In this paper, we consider the optimal design problem for extrapolation and estimation of the slope at a given point, say z , in a polynomial regression with no intercept. We provide explicit solutions of these problems in many cases and characterize those values of z , where this is not possible.

Keywords Polynomial regression · Extrapolation · Slope estimation · c -optimal designs

✉ Holger Dette
holger.dette@rub.de

Viatcheslav B. Melas
vbmelas@yandex.ru

Petr Shpilev
pitshp@hotmail.com

¹ Fakultät für Mathematik, Ruhr-Universität Bochum, 44780 Bochum, Germany

² Mathematics and Mechanics Faculty, St. Petersburg State University, University avenue, 28, Petrodvoretz, St. Petersburg, Russia 198504