

NONPARAMETRIC FUNCTION ESTIMATION

V. Dose and R. Fischer

Max-Planck-Institut für Plasmaphysik, EURATOM Association,
Boltzmannstr. 2, D-85748 Garching, *Germany*
(Volker.Dose@ipp.mpg.de)

Abstract

We have used recently piecewise linear functions to estimate the evolution and the trend of flowering onset for various species in terms of days after January first over more than a century with satisfactory success [1]. Meanwhile the question arose, whether there are other possibly more suitable functions to solve the problem. An obvious choice are cubic splines. We show that they perform poorly for the flowering onset problem. An interesting alternative are exponential splines which incorporate the piecewise linear case and the cubic splines as opposite limiting cases. Calculation of the evidences for the three different choices result in nearly equal values for polygon and exponential splines while cubic splines perform somewhat worse. We shall also present an application of exponential splines to the evergreen problem of deconvolution. A challenging test case treated already earlier with cubic splines [2] use data derived from a spectral function comprising a Lorentzian and a step function.

References:

- [1] V. Dose, A. Menzel, *Global Change Biology* **10** (2004) 259.
- [2] W. von der Linden, V. Dose, R. Fischer, *MAXENT96 - Proceedings of the Maximum Entropy Conference* (1997) 154.