# USE OF FOURIER TRANSFORMATION FOR BANDWIDTH SELECTION

JAN KOLÁČEK

ABSTRACT

The problem of bandwidth selection for non-parametric kernel regression is considered. We will follow the Nadaraya - Watson estimators especially. The circular design is assumed in this work to avoid the difficulties caused by boundary effects. Most of bandwidth selectors are based on the residual sum of squares (RSS). It is often observed in simulation studies that these selectors are biased toward undersmoothing. This leads to consideration of a procedure which stabilizes the RSS by modifying the periodogram of the observations. Simulation studies suggest that the proposed selector is much more consistent than the classical one. But in the practical examples, there the results can be miscellaneous.

**Keywords:** bandwidth selection, Fourier transform, kernel estimation, non-parametric regression

Jan Koláček, Department of applied mathematics, Faculty of science, Janáčkovo nám. 2a, 602 00 Brno, Czech Republic
*E-mail address*: `kolacek@math.muni.cz`