Estimation of the intensity of non-homogeneous point processes via wavelets

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Abstract In this article we consider the problem of estimating the intensity of a non-homogeneous point process on the real line. The approach used is via wavelet expansions. Estimators of the intensity are proposed and their properties are studied, including the case of thresholded versions. Properties of the estimators for non-homogeneous Poisson processes follow as special cases. An application is given for the series of daily Dow Jones indices. Extensions to more general settings are also indicated.

Keywords Intensity · Non-internally correlated point processes · Point processes · Poisson processes · Threshold · Wavelets