

**Statistica Sinica Preprint No: SS-2017-0112.R1**

<b>Title</b>	ORTHOGONAL SERIES ESTIMATION OF THE PAIR CORRELATION FUNCTION OF A SPATIAL POINT PROCESS
<b>Manuscript ID</b>	SS-2017-0112.R1
<b>URL</b>	<a href="http://www.stat.sinica.edu.tw/statistica/">http://www.stat.sinica.edu.tw/statistica/</a>
<b>DOI</b>	10.5705/ss.202017.0112
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## 2. BACKGROUND 6

where  $\hat{\rho}$  is an estimate of the constant intensity. The default in `spatstat` (Baddeley et al., 2015), following Stoyan and Stoyan (1994), is to use the Epanechnikov kernel with  $b = 0.15/\sqrt{\hat{\rho}}$ .

Guan (2007b) and Guan (2007a) suggest to choose  $b$  by composite likelihood cross validation or by minimizing an estimator of the mean integrated squared error defined over some interval  $I$  as

$$\text{MISE}(\hat{g}_m, w) = \varsigma_d \int_I \mathbb{E} \{ \hat{g}_m(r; b) - g(r) \}^2 w(r - r_{\min}) dr,$$

where  $\hat{g}_m$ ,  $m = k, d, c$ , is one of the aforementioned kernel estimators,  $w \geq 0$  is a weight function and  $r_{\min} \geq 0$ . With  $I = (r_{\min}, r_{\min} + R)$ ,  $w(r) = r^{d-1}$  and  $r_{\min} = 0$ , Guan (2007a) suggests to estimate the mean integrated squared error by

$$M(b) = \varsigma_d \int_0^R \{ \hat{g}_m(r; b) \}^2 dr + \sum_{\substack{u, v \in X_W \\ \|v-u\| \leq R}}^{\neq} \frac{\hat{g}_m^{-\{u,v\}}(\|v-u\|; b)}{\rho(u)\rho(v)|W \cap W_{v-u}|}, \quad (2.3)$$

where  $\hat{g}_m^{-\{u,v\}} = \hat{g}_m$ ,  $m = k, d, c$ , is defined as  $\hat{g}_m$  but based on the reduced data  $(X \setminus \{u, v\})$ . Guan and Jang (2010) instead use a spatial bootstrap for estimating (2.2). We return to (2.3) in Section 5.





















































