

Palm distributions and invariance properties of spatial point processes

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It is a fundamental and classical fact (see e.g. [1]), that there is an essentially unique correspondence between stationary point processes on the line and stationary sequences of interpoint distances. A spatial version of this result is not at all obvious. Thorisson ([4]) proposed to use *bijjective point shifts* to characterize Palm distributions of stationary point processes. We will present the main result in [2] showing that invariance under such point shifts does indeed provide an intrinsic description of Palm distributions. The proof is based on *symmetric area search* and on Mecke's [3] intrinsic characterization of Palm measures.

Timar [5] found a one-ended tree on stationary point processes that is constructed in a shift-invariant way. This amazing result suggests that it might be possible to identify Palm distributions as the probability measures that are invariant under a rather small family of bijective point shifts. We will discuss Timar's result as well as related questions on graphs and trees supported by stationary point processes.

1. *Kallenberg, O.* (2002). *Foundations of Modern Probability*. Second Edition, Springer, New York.
2. *Heveling, M. and Last, G.* (2004). Characterization of Palm measures via bijective point-shifts. to appear in *Annals of Probability*.
3. *Mecke, J.* (1967). Stationäre zufällige Maße auf lokalkompakten Abelschen Gruppen. *Z. Wahrsch. verw. Gebiete*, **9** 36–58.
4. *Thorisson, H.* (2000). *Coupling, Stationarity, and Regeneration*. Springer, New York.
5. *Timar, A.* (2004). Tree and Grid Factors of General Point Processes. *Electronic Comm. Probab.* **9**, 53–59.