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Limit theorems for functionals of stationary random fields

In this talk, an overview of the recent results on the limit theorems for functionals of stationary weakly dependent random fields will be given. Among such functionals are the integrals of a function of the field including the volumes of excursion sets. We consider central limit and functional theorems for (positively or quasi) associated and mixing fields. Examples will involve stable, max-stable and some square integrable fields. We conclude with an application to asymptotic statistical tests of hypotheses.