

Abstract: In studying the central limit theorem and the weak (Donsker) invariance principle for stationary discrete time processes, a powerful method consists in approximating partial sums of the process by martingales. We will show a short survey of this method and then an extension of this approach to a study of limit theorems for stationary random fields. The research was done with Wei Biao Wu, Jana Klicnarova and Yizao Wang.