

On Bahadur-Kiefer, Vervaat and Vervaat error processes of long-range dependent sequences

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We study the asymptotic behaviour of long-range dependent sequences based Bahadur-Kiefer sums of empirical and quantile processes, their integrated Vervaat processes, as well as the deviations of the latter from their limiting process, the so-called Vervaat-error processes. Using Vervaat's (1972) approach to studying processes with a positive drift and their inverses, we will recall that the Bahadur-Kiefer and Vervaat error processes cannot converge weakly in the i.i.d. case. In contrast to this, but using the same approach, we will conclude that these processes do converge weakly to Dehling-Taqqu type processes when they are based on long range dependent sequences. This presentation will be based on joint work with E. Csáki (Rényi Institute) and R. Kulik (University of Ottawa).