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Long-range dependent vs. i.i.d.r.v.'s based Bahadur–Kiefer, Vervaat and Vervaat error processes

This talk will review recent developments on long-range dependent sequences based processes as in M. Csörgő, B. Szyszkowicz and L. Wang, *Strong invariance principles for sequential Bahadur–Kiefer and Vervaat error processes for long-range dependent sequences,* Ann. Statist. **34**(2006), 1013–1044; ibid., (6) **35**(2007); M. Csörgő and R. Kulik, *Reduction principles for quantile and Bahadur–Kiefer processes of long-range dependent linear sequences,* Probab. Theory Rel., to appear; M. Csörgő and R. Kulik, *Weak convergence of Vervaat and Vervaat error processes of long-range dependent sequences,* J. Theoret. Probab., to appear; and their references. The paper by E. Csáki, M. Csörgő, A. Földes, Z. Shi and R. Zitikis, *Pointwise and uniform asymptotics of the Vervaat error process,* J. Theoret. Probab. **15**(2002), 845–875, constitutes an i.i.d. backdrop for the recent developments as in the just mentioned papers on long-range dependent sequences based processes. For example, it is well known that the Bahadur–Kiefer and Vervaat error processes cannot converge weakly in the i.i.d. case. In contrast to this, when these processes are based on certain long-range dependent sequences, then we, for example, conclude that they do converge weakly to appropriate Dehling–Taqqu type limit processes that are based on H. Dehling, M.S. Taqqu, *The empirical process of some long range dependent sequences with an application to U-statistics,* Ann. Statist. **17**(1989), 1767–1783.