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FUNCTIONAL LIMIT THEOREMS IN HÖLDER SPACE FOR RESIDUALS OF NEARLY NONSTATIONARY $\mathrm{AR}(1)$ PROCESS

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Abstract: We investigate the polygonal line process built on the residuals of the first order nearly nonstationary autoregressive process. We prove functional limit theorems in Hölder space in two cases: the autoregressive coefficient ϕ_n is defined as $e^{\gamma/n}$, $\gamma < 0$ is a constant, and ϕ_n is defined as $1 - \gamma_n/n$, $\gamma_n \to \infty$, and γ_n/n tends to zero as $n \to \infty$. Also we discuss some applications of these functional limit theorems in epidemic change detection.

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