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AN ALMOST SURE LIMIT THEOREM FOR THE MAXIMA AND SUMS OF STATIONARY GAUSSIAN SEQUENCES

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Abstract: Let $X_1, X_2, \ldots$ be some standardized stationary Gaussian process and let us put:

$$M_k = \max(X_1, \ldots, X_k), \quad S_k = \sum_{i=1}^{k} X_i, \quad \sigma_k = \sqrt{\mathrm{Var(S_k)}}.$$

Our purpose is to prove an almost sure central limit theorem for the sequence $(M_k, S_k/\sigma_k)$ under suitable normalization of M_k. The investigations presented in this paper extend the recent research of Csaki and Gonchigdanzan [1] and Dudziński [2].

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