



# Pitman closeness of record values to population quantiles

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## Abstract

In this paper, we examine the Pitman closeness of record statistics to the population quantiles of a location-scale family of distributions and study its monotonicity properties. Even though in general it depends on the parent distribution, exact expressions are derived for the required probabilities in the case of Uniform(-1,1) and exponential distributions. For the population median, it is shown that the first upper record is the Pitman-closest among all upper record values. Moreover, for the population median, in the case of symmetric distributions, the Pitman closeness probabilities of records are shown to be distribution-free and explicit expressions are also derived for these probabilities.

**Keywords and Phrases:** Distribution-free, Exponential distribution, Probability integral transformation, Pitman closeness, Record values, Usual stochastic order, Uniform distribution.

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## 1 Introduction

Let  $\{X_i, i \geq 1\}$  be a sequence of independent and identically distributed (iid) random variables with a cumulative distribution function (cdf)  $F(x)$  and an absolutely continuous probability

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