One more approach to the convergence of the empirical process to the Brownian bridge

Jean-François Marckert, LaBRI, Université Bordeaux 1

Abstract

A theorem of Donsker asserts that the empirical process converges in distribution to the Brownian bridge. The aim of this paper is to provide a new and simple proof of this fact.

AMS 2000 subject classifications: Primary 62G30, 60F17.

Keywords: Empirical process, Donsker Theorem, Brownian bridge.



Full Text: PDF

Marckert, Jean-François, One more approach to the convergence of the empirical process to the Brownian bridge, Electronic Journal of Statistics, 2, (2008), 118-126 (electronic). DOI: 10.1214/07-EJS131.

References

- [1] M.D. Donsker, (1952) Justification and extension of Doob's heuristic approach to the Kolmogorov-Smirnov theorems, Annals of Mathematical Statistics., 23:277–281, 1952. MR0047288
- [2] P. Billingsley, (1968) Convergence of Probability measure, John Wiley and Sons, New York, third edition. MR0233396
- [3] J. L. Doob, (1949) Heuristic approach to the Kolmogorov-Smirnov theorems, Ann. Math. Statistics 20, 393–403. MR0030732
- [4] O. Kallenberg (1997), Foundations of Modern Probability. Probability and Its Applications. Springer, New York, NY. MR1464694
- [5] J. Komlós, P. Major, G. Tusnády, (1975) An approximation of partial sums of independent RV 's and the sample DF, I. Z. Wahrscheinlichkeitstheorie und Verw. Gebiete 32, 111–131. MR0375412
- [6] G.R. Shorack, J.A. Wellner, (1986) Empirical processes with applications to statistics, Wiley Series in Probab. and Math. Stat.: Probab. and Math. Stat. John Wiley & Sons, Inc., New York. MR0838963
- [7] A.W. van der Vaart, J.A. Wellner, Jon A. (1996) Weak convergence and empirical processes. With applications to statistics. Springer Series in Stat. Springer-Verlag, New York. MR1385671