



PROBABILITY SEMINAR

Donsker's Theorem for Regenerative Processes

Marta Lizeth Calvache Hoyos

Department of Mathematics - UnB

Date: 22/11/2019

Time: 14:15 Hours

Mini-Auditorium MAT

Abstract. A stochastic process $\{X(t) : t \geq 0\}$ is intuitively a regenerative process if it can be split into i.i.d. cycles. Today, applied fields as varied as telecommunications, finance, production, inventory, biology, computer science and physics use models that sometimes rely on regenerative process theory for their analysis. Examples of regenerative sequences include i.i.d. random variables, irreducible and recurrent Markov chains, Harris irreducible Markov chains, semi-Markov chains and $GI/G/1$ queues. In this seminar we will present an Donsker's invariance principle for the empirical process of regenerative sequences via Mallows distance.

References

- [1] ATHREYA, K. B., LAHIRI, S. N. *Measure Theory and Probability Theory*. Springer-Verlag New York, (2006).
- [2] BILLINGSLEY, P. *Convergence of Probability Measures*. Wiley, New York, (1968).
- [3] SHAO, Q.M. and YU H. *Weak convergence for weighted empirical process of dependent sequences*. The Annals of Probability, vol 24, pp. 2098-2127. (1996).