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Disaggregation of Long Memory Processes on $mathcal{C}^{infty}$ Class

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Abstract

We prove that a large set of long memory (LM) processes (including classical LM processes and all processes whose spectral densities have a countable number of singularities controlled by exponential functions) are obtained by an aggregation procedure involving short memory (SM) processes whose spectral densities are infinitely differentiable (C^{∞}). We show that the C^{∞} class of spectral densities infinitely differentiable is the best class to get a general result for disaggregation of LM processes in SM processes, in the sense that the result given in C^{∞} class cannot be improved by taking for instance analytic functions instead of indefinitely derivable functions.

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Bibliography

1. Azencott R. and Dacunha-Castelle D. (1986), *Series of irregular observations. Springer Verlag, New York, viii+236 pp.* MR 87i:62153
2. *Dacunha-Castelle D. and Fermín L. (2005), Aggregations of Ornstein-Uhlenbeck processes or AR processes and long memory. (Preprint) Math. Review number not available.*
3. *Dacunha-Castelle D. and Fermín L. (2006), Aggregations of Doubly Stochastic Interactive Gaussian Processes and Toeplitz forms of U-Statistics. Dependence in Probability and Statistics, Lecture Notes in Statistics , 187. Math. Review number not available.*
4. *Dym H. and McKean H.P. (1972) Fourier Series and Integrals Academic Press New York and London.* 0442564
5. *Gonc{c}alvez, E. and Gourieroux, C. (1988), Aggr'egations de processus autor'egressives d'ordre 1. Annales d'Economie et de Statistique, 12, 127-149.* MR 90f:62283
6. *Granger, C.W.J. (1980), Long Memory relationships and the aggregation of dinamic models. Journal of Econometrics, 14 no. 2, 227--238.* MR 81m:62165
7. *Kahane J.P. (1994), Emsembles parfaits et s'eries trigonom'etriques. With notes by Kahane, Thomas W. Körner, Russell Lyons and Stephen William Drury. Hermann, Paris, 245 pp.* MR 96e:42001
8. *Linden, M. (1999), Time series properties of aggregated AR(1) processes with uniformly distributed coefficients. Economics Letters, 64, no. 1, 31-36.* MR1703637
9. *Lippi, M. and Zaffaroni, P. (1998), Aggregation of simple linear dynamics: exact asymptotic results. Econometrics Discussion Paper 350, STICERD-LSE. Math. Review number not available.*
10. *Oppenheim, G. and Viano, M.-C. (2004), Aggregation of ramdom parameters Ornstein-Uhlenbeck or AR processes: some convergence results Journal of Time Series Analysis, 25, no. 3, 335--350.* MR2062677
11. *Terence, T.C and Kwan-to, W. (2001), Time series properties of aggregated AR(2) processes. Economics Letters, 73, no. 3, 325--332.* MR1866754

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