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ELABORATION OF A NEW CENTERED GAUSSIAN PROCESS

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ABSTRACT

In this work, firstly, we introduce a new gaussian process as an extension of the well known bifractional Brownian motion as a linear combination of a finite number of independent bifractional Brownian motions. We have chosen to call this process the mixed bifractional Brownian motion. Secondly, we study some stochastic properties and characteristics of this process: The Holder continuity, the self similarity, the quadratic variation, the Markov property and the differentiability of the trajectories, the long-range dependence, the stationarity of the increments and the behavior of the noise generated by the increments of this process. We believe that our process can be a possible candidate for models which involve self similarity, long range dependence and non-stationarity of increments.

***K*eywords** Gaussian process · Brownian motion · Quadratic variation

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