An error occurs in the proof of Lemma 2 (Coeurjolly (2005), p.1001). The following has to be read

\[ E(Z(j_1^*)Z(j_2^*)) \xrightarrow{N \to +\infty} \begin{cases} \frac{\pi_n^2(h(t_1), h(t_1))}{\pi_n(0, 0)} |j_2^* - j_1^*|^{2H(t_1) - 2p} & \text{if } j_1^*, j_2^* \leq v_N(t_1) \\ \frac{\pi_n^2(h(t_2), h(t_2))}{\pi_n(0, 0)} |j_2^* - j_1^*|^{H(t_1)+H(t_2)-2p} & \text{if } j_1^*, j_2^* > v_N(t_1) \\ 0 & \text{else.} \end{cases} \]

For the third situation, it was previously written

\[ \frac{\pi_n^2(h(t_1), h(t_1))}{\pi_n(0, 0)} |j_2^* - j_1^*|^{H(t_1)+H(t_2)-2p} \left\{ \frac{\pi_n^2(h(t_2), h(t_2))}{\pi_n(0, 0)} \right\}^{1/2} = O \left( |j_2^* - j_1^*|^{H(t_1)+H(t_2)-2p} \right). \]

But for \( n \) sufficiently large, \( t_1 \) and \( t_2 \) are sufficiently separated in the sense that the neighborhoods \( V_{N, \varepsilon}(t_1) \) and \( V_{N, \varepsilon}(t_2) \) do not overlap, which then implies that this term tends to zero.

The consequence of this error is that the correct statement of Proposition 1 (ii) is the following: the finite-dimensional laws of the process \( \{ \sqrt{2N} \sum_{a \in V_{N, \varepsilon}} G(t, a), t \in [0, 1] \} \) converges, when \( N \to +\infty \), towards those of a centered Gaussian \( \{ G(t), t \in [0, 1] \} \) with covariance function defined by

\[ Cov(G(s), G(t)) = \begin{cases} 2 \sum_{k \in \mathbb{Z}} \frac{\pi_n^2(h(k), h(k))}{\pi_n(0, 0)} & \text{if } s = t \\ 0 & \text{if } s \neq t. \end{cases} \]

A similar remark applies to Proposition 2.

I am sincerely very grateful to A. Begyn (University of Toulouse III), who indicated me this mistake. This error has been corrected in his paper (Begyn (2005)) that generalizes this work.
References


J.-F. Coeurjolly (2005), Identification of multifractional Brownian motion, Bernoulli 11(6), 987-1008.