

ON THE MARKOV PROPERTY OF SOME BROWNIAN MARTINGALES

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Let h_n be the (probabilists') Hermite polynomial of degree n . Let $H_n(z, a) = a^{n/2}h_n(z/\sqrt{a})$ and $H_n(z, 0) = z^n$. It is well-known that $H_n(B_t, t)$ is a martingale for every n . In this paper, we show that for $n \geq 3$, $H_n(B_t, t)$ is not Markovian. We then give a brief discussion on mimicking $H_n(B_t, t)$ in the sense of constructing martingales whose marginal distributions match those of $H_n(B_t, t)$.