

The Levy-area process (W^1, W^2, A) where W^1, W^2 are two independent Brownian Motions and $A_t = \frac{1}{2} \left(\int_0^t W_u^1 dW_u^2 - \int_0^t W_u^2 dW_u^1 \right)$ is their associated Levy-area obeys the following version of the Chen-relation:

$$A_{0,t} = A_{0,s} + A_{s,t} + \frac{1}{2} \left(W_{0,s}^1 W_{s,t}^2 - W_{0,s}^2 W_{s,t}^1 \right)$$

where $0 \leq s \leq t$. Furthermore, any process that follows this relation is again a Levy-area process.