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Correction to:

CONTINUOUS OCONE MARTINGALES AS WEAK LIMITS OF RESCALED MARTINGALES

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As pointed out by Pecatti (2004), Theorem 4.1 of Van Zanten (2002) is false. The error is due to an erroneous application of Skorohod's alsmost sure representation theorem in the proof. The correct part of the proof only yields the following, weaker statement, which is essentially known. The notations are as in Van Zanten (2002).

Theorem. *Let M be a martingale with bounded jumps and let a_n, b_n be sequences of positive numbers, both increasing to infinity. For each n, define the rescaled martingale M^n by*

$$M_t^n = \frac{1}{\sqrt{a_n}} M_{b_n t}.$$

If C is a stochastic process such that $[M^n]_t \xrightarrow{P} C_t$ for every $t \geq 0$, then C is continuous and $M^n \Rightarrow \beta_C$, where β is a standard Brownian motion independent of C.

References

Pecatti, G. (2004). Weak convergence to Ocone martingales: a remark. *Elec. Comm. Prob.* **9**, 172-174.

Van Zanten, J.H. (2002). Continuous Ocone martingales as weak limits of rescaled martingales. *Elec. Comm. Prob.* **7**, 215–222.