TANGENTIAL EXISTENCE AND COMPARISON, WITH APPLICATIONS TO SINGLE AND MULTIPLE INTEGRATION

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Abstract: Two semi-martingales with respect to a common filtration are said to be *tangential* if they have the same local characteristics. When the latter are non-random, the underlying semi-martingale is known to have independent increments. We show that every semi-martingale has a tangential process with conditionally independent increments. We also extend the Zinn–Hitchenko and related tangential comparison theorems to continuous time. Combining those results, we obtain some surprisingly general existence, convergence, and tightness criteria for broad classes of single and multiple stochastic integrals.

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