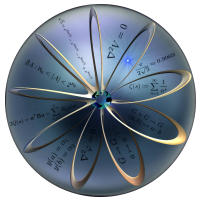

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completeness of semimartingale convergence

Canonical name	CompletenessOfSemimartingaleConvergence
Date of creation	2013-03-22 18:40:47
Last modified on	2013-03-22 18:40:47
Owner	gel (22282)
Last modified by	gel (22282)
Numerical id	4
Author	gel (22282)
Entry type	Theorem
Classification	msc 60G07
Classification	msc 60G48
Classification	msc 60H05

Theorem. *Let $(\Omega, \mathcal{F}, (\mathcal{F}_t)_{t\in\mathbb{R}_+}, \mathbb{P})$ be a filtered probability space. Then, the space of semimartingales $\mathcal{S}$ forms a* `http://planetmath.org/Complete`*complete topological vector space under the semimartingale topology.*

That is, semimartingale convergence is a `http://planetmath.org/TopologicalVectorSpaceve` topology and, for any sequence $X^n \in \mathcal{S}$ such that $X^n - X^m \to 0$ as $m, n \to \infty$ then there exists an $X \in \mathcal{S}$ with $X^n \to X$.