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adapted process

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Let $\{X_t \mid t \in T\}$ be a stochastic process defined on a probability space $(\Omega, \mathcal{F}, P)$ and $\{\mathcal{F}_t \mid t \in T\}$ a filtration (an increasing sequence of sigma sub-algebras of $\mathcal{F}$), where T is a linearly ordered subset of $\mathbb{R}$ with a minimum t_0. Then the process $\{X_t\}$ is said to be *adapted to* the filtration $\{\mathcal{F}_t\}$ if for each $t \geq t_0$, X_t is `http://planetmath.org/MathcalFMeasurableFunction`$\mathcal{F}_t$-measurable:

$$X_t^{-1}(B) \in \mathcal{F}_t \text{ for each Borel set } B \in \mathbb{R}.$$

A stochastic process is an *adapted process* if it is adapted to some filtration.