



Mathematics > Probability

On absolutely continuous compensators and nonlinear filtering equations in default risk models

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We discuss the pricing of defaultable assets in an incomplete information model where the default time is given by a first hitting time of an unobservable process. We show that in a fairly general Markov setting, the indicator function of the default has an absolutely continuous compensator. Given this compensator we then discuss the optional projection of a class of semimartingales onto the filtration generated by the observation process and the default indicator process. Available formulas for the pricing of defaultable assets are analyzed in this setting and some alternative formulas are suggested.

Subjects: **Probability (math.PR)**; Pricing of Securities (q-fin.PR)

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