

On the stopping of diffusions with discontinuous coefficients

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ABSTRACT

We consider optimal stopping of integral functionals with exponential discount of the form $E_x \int_0^\tau e^{-\lambda s} f(X_s) ds$, $\lambda \geq 0$ for one-dimensional diffusions X , where the coefficients of X are allowed to be discontinuous. Therefore the standard formulation of the free boundary does not work. We provide an interesting modification of the standard form of the free boundary problem that works good here, prove the verification theorem, and study completely the case of no drift and no discount.