

THE FULLY NONLINEAR STOCHASTIC IMPULSE CONTROL PROBLEM

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ABSTRACT. Motivated by a problem in stochastic impulse control theory, we aim to study solutions to a free boundary problem of obstacle-type. We obtain sharp estimates for the solution using nonlinear tools which are independent of the modulus of semi-convexity of the obstacle. This allows us to state a general estimate for solutions to free boundary problems of obstacle-type admitting obstacles with a general modulus of semi-convexity. As an application we prove sharp estimates for the solution to a fully nonlinear stochastic impulse control problem. This is joint work with Luis Caffarelli and Alessio Figalli.