

A PROBLEM OF OPTIMAL CONTROL FOR A NONLINEAR STOCHASTIC SCHRÖDINGER  
EQUATION

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A given objective functional – depending on the solution of an initial and boundary value problem of the nonlinear controlled Schrödinger equation with additive Gaussian noise – shall be minimised by an optimal control. The nonlinearity is supposed to be Lipschitz-continuous and growth-bounded. These standard assumptions allow to prove the existence, uniqueness and some smoothness properties of the variational solution of the given stochastic Schrödinger problem. Furthermore, a gradient formula of the objective functional is calculated with the help of the Gâteaux differential and the adjoint Schrödinger equation.