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We study the identification problems for the damped nonlinear Klein-Gordon equation. In particular, we consider the equation with a variable diffusion coefficient as follows.

$$u_{tt}(t, x) + \alpha u_t(t, x) - \nabla(\beta(x)\nabla u(t, x)) + \delta g(u(t, x)) = f(t, x)$$

where the diffusion coefficient $\beta(x)$ is Lipschitz continuous. We prove the existence of the optimal parameter and derive the necessary conditions on the optimal parameters. (Received September 25, 2012)