We propose a novel PDE-based anisotropic filter for noise reduction in multicolor images. It is a generalization of Nitzberg \& Shiota's (1992) model being a hyperbolic relaxation of the well-known parabolic Perona \& Malik's filter (1990). First, we consider a `spatial' mollifier-type regularization of our PDE system and exploit the maximal L^{2}-regularity theory for non-autonomous forms to prove a well-posedness result both in weak and strong settings. Again, using the maximal L^{2}-regularity theory and Schauder's fixed point theorem, respective solutions for the original quasilinear problem are obtained and the uniqueness of solutions with a bounded gradient is proved. Finally, the long-time behavior of our model is studied.