About a non-smooth regularization of a forward-backward parabolic equation

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A variation of the Cahn-Hilliard equation, describing diffusion of species by a suitable regularization of a "forward-backward" parabolic equation is discussed. In the concerned system, the general viscous regularization is expressed by a maximal monotone graph acting on the time derivative of the concentration and presenting a strong coerciveness property. The phase variable stands for the concentration of a chemical species and it evolves under the influence of a non-convex free energy density. For the chemical potential a non-homogeneous Dirichlet boundary condition is assumed. Existence and continuous dependence results are shown. The talk reports on a joint work with E. Bonetti and G. Tomassetti.