

**REGULARITY RESULTS AND LARGE TIME BEHAVIOR  
FOR INTEGRO-DIFFERENTIAL EQUATIONS WITH  
COERCIVE HAMILTONIANS.**

ABSTRACT. In this paper we obtain regularity results for elliptic integro-differential equations driven by the stronger effect of coercive gradient terms. This feature allows us to construct suitable strict supersolutions from which we conclude Hölder estimates for bounded subsolutions. In many interesting situations, this gives way to a priori estimates for subsolutions. We apply this regularity results to obtain the ergodic asymptotic behavior of the associated evolution problem in the case of superlinear equations. One of the surprising features in our proof is that it avoids the key ingredient which are usually necessary to use the Strong Maximum Principle: linearization based on the Lipschitz regularity of the solution of the ergodic problem. The proof entirely relies on the Hölder regularity.

This is a joint work with Guy Barles, Olivier Ley and Shigeaki Koike.