Some variational convergence results with applications to evolution inclusions

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Abstract. We study variational convergence for integral functionals defined on $L^\infty_{\mathbf{H}}([0,1];\mathrm{dt}) \times \mathsf{Y}([0,1];\mathbf{Y})$ where $\mathbf{H}$ is a separable Hilbert space, $\mathbf{Y}$ is a Polish space and $\mathsf{Y}([0,1];\mathbf{Y})$ is the space of Young measures on $[0,1] \times \mathbf{Y}$, and we investigate its applications to evolution inclusions. We prove the dependence of solutions with respect to the control Young measures and apply it to the study of the value function associated with these control problems. In this framework we then prove that the value function is a viscosity subsolution of the associated HJB equation. Some limiting properties for nonconvex integral functionals in proximal analysis are also investigated.

Key words: Young measure, relaxed control, semicontinuity, integral functional, subdifferential, proximal analysis, viscosity subsolution