

# On Metric Regularity of some Variational Inequalities. Applications to Optimal Control

Victor Lopez Mengo\*, Marc Quincampoix<sup>†</sup>

In optimal control the necessary optimality condition involves a variational inequality on the space of  $L^1$  controls and on the space of absolutely continuous functions. The stability of the necessary optimality condition is related to the metric regularity of the variational inequality. In [1,2, 3] a direct approach was used to obtain metric regularity. We investigate this question by using criteria of metric regularity which allow to generalize these results.

## References

- [1] Corella A., Quincampoix M., Veliov V. M.: Strong bi-metric regularity in affine optimal control problems Pure and Applied Functional Analysis, vol 6, N. 6, 1119-1137 (2021)
- [2] Quincampoix M., Veliov V. M.: Metric Regularity and Stability of Optimal Control Problems for Linear Systems. SIAM J. Control Optim. 51(5), 4118-4137 (2013)
- [3] Quincampoix M., Scarinci T., Veliov V.M: On the metric regularity of affine optimal control problems. *Journal of Convex Analysis*, **27**(2), 2020.

---

\*University of Brest, France.

<sup>†</sup>University of Brest, France. Marc. Quincampoix@univ-brest.fr