

On the set of sustainable thresholds: new developments and open questions

This talk is concerned with a dual object of the so-called viability kernel of a control system with mixed (state-control) constraints. This object, called the *set of sustainable thresholds*, describes the possible thresholds for which a given initial condition is viable. In this talk, we are concerned with characterizing the weak and strong Pareto fronts of the set of sustainable thresholds and providing a practical method for computing such objects based on optimal control theory and a level-set approach. We present some extensions to the case with uncertainty and discuss possible future developments to more involved frameworks.

References

- [1] P. GAJARDO, C. HERMOSILLA, *Applied Mathematics & Optimization*. Pareto fronts of the set of sustainable thresholds for constrained control systems, 83, 1103–1121, 2021.
- [2] P. GAJARDO, C. HERMOSILLA, A. PICARELLI *Natural Resource Modeling*. On the set of robust sustainable thresholds, 34, 4, e12334, 2021.