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LIPSCHITZ UPPER SEMICONTINUITY OF LINEAR INEQUALITY SYSTEMS

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This talk is focused on the computation of the Lipschitz upper semicontinuity modulus of the feasible set mapping for linear inequality systems in the two parametric contexts of *right-hand side* (RHS, for short) and *full* perturbations; the respective results are traced out from [1] and [2]. The difference between both perturbation settings is emphasized. In particular, the polyhedral structure of the graph of the feasible set mapping under RHS perturbations enables us to apply classical results as those of Hoffman (1952) and Robinson (1981) to ensure the Lipschitz continuity of this mapping on its domain (which implies the Lipschitz upper semicontinuity at any element of its domain). In contrast, the graph of the feasible set mapping under full perturbations is no longer polyhedral (not even convex). This fact requires *ad hoc* techniques to analyze the Lipschitz upper semicontinuity property and its corresponding modulus. For completeness, and with the aim of pointing out the difference between both contexts, RHS *vs* full perturbations, the talk also discusses what happens with the so-called *Hoffman constant.*

References

[1] J. Camacho, M. J. Cánovas, J. Parra, *From calmness to Hoffman constants for linear semi-infinite inequality systems*, SIAM J, Optim. 32, 2859–2878, 2022.

[2] J. Camacho, M. J. Cánovas, H. Gfrerer, J. Parra, *Lipschitz upper semicontinuity of linear inequality systems under full perturbations*, preprint 2025 (https://arxiv.org/abs/2505.02575).

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