Seminar/Talk
Generalized dichotomies and admissibility
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Abstract: Given a sequence of bounded linear operators acting on a Banach space or, equivalently, a linear difference equation determined by this sequence, we define the notion of μ-dichotomy with respect to a sequence of norms, a notion that contains, as particular cases, the recently introduced corresponding notions for exponential [1, 2] and polynomial [3] behavior. The existence of such type of generalized dichotomy prescribes a very weak form of hyperbolic behavior for the evolution family associated with the difference equation but still allows the obtention of rich qualitative results.

In this talk, we study the relation between existence of generalized dichotomies and admissibility, a notion that goes back to the work of Perron: a pair of Banach spaces (E, F) is admissible for a linear difference equation if for every perturbation of the equation, taken in the space F, there exists a unique solution of the perturbed equation in the space E. We also use characterizations derived to obtain robustness results. As particular cases, we recover several results in the literature [2, 3] and obtain a result for nonuniform dichotomies with logarithmic growth. This talk is based on [4].

References

[1] L. Barreira, D. Dragičević and C. Valls, *Nonuniform hyperbolicity and admissibility*, Adv. Nonlinear Stud., n. 14, 791-811 (2014).

[2] L. Barreira, D. Dragičević and C. Valls, *Nonuniform hyperbolicity and one-sided admissibility*, Rend. Lincei Mat. Appl., n. 27, 1–13 (2016).

[3] D. Dragičević, *Admissibility and nonuniform polynomial dichotomies*, Mathematische Nachrichten, n. 93, 226–243 (2019).

[4] C. M. Silva, *Admissibility and generalized nonuniform dichotomies for discrete dynamics*, Commun. Pure Appl. Anal., n. 20, 3419–3443 (2021).

- **Dia:** 13 de Outubro de 2022, às 11h15min;

- **Local:** Sala de Reuniões, Departamento de Matemática, UBI.