NUMERICAL INVARIANT FOR MEASURABLE COCYCLES

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The theory of *numerical invariants* for representations can be generalized to measurable cocycles. This provides a natural notion of *maximality* for cocycles associated to complex hyperbolic lattices with values in groups of Hermitian type. Among maximal cocycles, the class of *Zariski dense* ones turns out to have a rigid behavior.

We will briefly introduce measurable cocycles and the machinery of numerical invariants, with a particular focus on their implementation via *boundary maps*. Then we will present a rigidity result about cocycles from complex hyperbolic lattices $\Gamma < \mathrm{pu}(1,n)$ into the Hermitian group $\mathrm{su}(p,q)$. In this context the *Toledo invariant* allows to introduce maximal cocycles. The combination of maximality, Zariski density and some ergodic theory implies *superrigidity* in the sense of Zimmer, which means that maximal Zariski dense cocycles $\Gamma \times X \to \mathrm{su}(p,q)$ comes from representations $\mathrm{pu}(1,n) \to \mathrm{su}(p,q)$ of the ambient group. Time permitting, we will see the crucial steps and the techniques involved in the proof. This is based on a joint project with Alessio Savini. [3, 2, 1]

References

[1] F. Sarti and A. Savini, *Superrigidity of maximal measurable cocycles of complex hyperbolic lattices* Mathematische Zeitschrift **300** (2021), no. 1, 421-433.

[2] F. Sarti and A. Savini, *Parametrized Kähler class and Zariski dense Eilenberg–MacLane cohomology* preprint

[3] F. Sarti and A. Savini, *Boundary maps and reducibility for cocycles into the isometries CAT(0)-spaces*, preprint.

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