

Reading Seminar: Affine Buildings

SoSe 2022

In 2021, Burger, Iozzi, Parreau, and Pozzetti defined a compactification of higher Teichmüller spaces using the real spectrum compactification [BIPP21]. Their work is inspired by Brumfiel’s compactification of classical Teichmüller space, where trees of non-Archimedean hyperbolic planes arise. For higher rank Lie groups, analogous objects show up, namely affine buildings over non-Archimedean fields. The end goal of this reading group is to understand the affine buildings from the [BIPP21] compactification. We will learn about different types of affine buildings, and close with the ones arising in [BIPP21], i.e. Λ -buildings.

We will begin with Brumfiel’s article [Bru88] about trees of non-Archimedean hyperbolic planes. We will then move on to the work of Kleiner and Leeb [KL97], where explicit constructions of \mathbb{R} -buildings are given. Next is Parreau’s work [Par00], in which she gives an explicit model of affine buildings over $GL(n, \mathbb{F})$, where \mathbb{F} is allowed to be non-Archimedean. We close with Kramer and Tent’s article [KT02], where a construction of Λ -buildings is given.

When and where?

We will meet **weekly** on **Wednesdays, 11:15-12:15** in **SR 3** starting April 27, 2022 (except when Differential Geometry Group meetings take place).

References

- [BIPP21] M. Burger, A. Iozzi, A. Parreau, and M. B. Pozzetti. “The real spectrum compactification of character varieties: characterizations and applications”. en. In: *Comptes Rendus. Mathématique* 359.4 (2021), pp. 439–463.
- [Bru88] G. W. Brumfiel. “The tree of a non-Archimedean hyperbolic plane”. In: *Geometry of group representations (Boulder, CO, 1987)*. Vol. 74. Contemp. Math. Amer. Math. Soc., Providence, RI, 1988, pp. 83–106.
- [KL97] B. Kleiner and B. Leeb. “Rigidity of quasi-isometries for symmetric spaces and Euclidean buildings”. In: *Publications Mathématiques de l’IHÉS* 86 (1997), pp. 115–197.
- [KT02] L. Kramer and K. Tent. “Affine Λ -buildings, ultrapowers of Lie groups and Riemannian symmetric spaces: an algebraic proof of the Margulis conjecture”. In: (Oct. 2002).
- [Par00] A. Parreau. “Immeubles affines: Construction par les normes et étude des isométries”. In: vol. 262. Jan. 2000, pp. 263–302.

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