

Oberseminar Winter 2024/25

## Sarnak's Density Conjecture

**1. Anton Deitmar:**

*Representation Theory of semisimple Lie groups.* [6]

**2. Paul Vögele:**

*Representations of  $p$ -adic groups.* [2, 3]

**3. Giacomo Gavigli:**

*Matrix coefficients and the pre-trace formula.* [4] Section 4

4. *Weak injectivity radius property and spectral geometry.* [4] Sections 5 - 7

5. *Bernstein theory and matrix coefficients.* [4] Sections 8 & 9

Further literature: [1, 5, 7]

## References

- [1] Edgar Assing and Valentin Blomer, *The density conjecture for principal congruence subgroups*, Duke Math. J. **173** (2024), no. 7, 1359–1426, DOI 10.1215/00127094-2023-0040. MR4757534
- [2] P. Cartier, *Representations of  $p$ -adic groups: a survey*, Automorphic forms, representations and  $L$ -functions (Proc. Sympos. Pure Math., Oregon State Univ., Corvallis, Ore., 1977), Proc. Sympos. Pure Math., XXXIII, Amer. Math. Soc., Providence, RI, 1979, pp. 111–155.
- [3] J. Fintzen, *Representations of  $p$ -adic groups*, available at [https://www.math.uni-bonn.de/people/fintzen/Fintzen\\_CDM.pdf](https://www.math.uni-bonn.de/people/fintzen/Fintzen_CDM.pdf).
- [4] Konstantin Golubev and Amitay Kamber, *On Sarnak's density conjecture and its applications*, Forum Math. Sigma **11** (2023), Paper No. e48, 51, DOI 10.1017/fms.2023.40. MR4603107
- [5] S. Jana and A. Kamber, *On the local  $L^2$ -bound of the Eisenstein series*, available at arXiv: 2210.16291.
- [6] Anthony W. Knap, *Representation theory of semisimple groups*, Princeton Landmarks in Mathematics, Princeton University Press, Princeton, NJ, 2001. An overview based on examples; Reprint of the 1986 original.

- [7] Peter Sarnak and Xiao Xi Xue, *Bounds for multiplicities of automorphic representations*, Duke Math. J. **64** (1991), no. 1, 207–227, DOI 10.1215/S0012-7094-91-06410-0. MR1131400