V5B7: ADVANCED TOPICS IN ANALYSIS
"GEOMETRIC ASPECTS OF HARMONIC ANALYSIS"

WINTER SEMESTER 2016/17

List of topics

(1) A. Carbery, M. Christ and J. Wright, *Multidimensional van der Corput and sublevel set estimates.* J. Amer. Math. Soc. **12** (1999), no. 4, 981–1015.

Focus on Sections 2 and 3. Time permitting, cover Section 4 and some applications from Section 8.

(2) A. Córdoba, *Singular integrals, maximal functions and Fourier restriction to spheres: the disk multiplier revisited,* Adv. Math. **290** (2016), 208–235.

(3) Z. Dvir, *On the size of Kakeya sets in finite fields.* J. Amer. Math. Soc. **22** (2009), no. 4, 1093–1097.

For a nice complementary discussion, see Tao's blog entry:
terrytao.wordpress.com/2008/03/24/dvirs-proof-of-the-finite-field-kakeya-conjecture/

(4) D. Foschi, *Maximizers for the Strichartz inequality.* J. Eur. Math. Soc. (JEMS) **9** (2007), no. 4, 739–774.

Complemented by J. Bennett, N. Bez, A. Carbery and D. Hundertmark, *Heat-flow monotonicity of Strichartz norms.* Anal. PDE **2** (2009), no. 2, 147–158.

(5) L. Guth, *A short proof of the multilinear Kakeya inequality.* Math. Proc. Cambridge Philos. Soc. **158** (2015), no. 1, 147–153.

Complemented by A. Carbery and S. Valdimarsson, *The endpoint multilinear Kakeya theorem via the Borsuk–Ulam theorem.* J. Funct. Anal. **264** (2013), no. 7, 1643–1663.

(6) M. Keel and T. Tao, *Endpoint Strichartz estimates.* Amer. J. Math. **120** (1998), no. 5, 955–980.

(7) R. S. Strichartz, *Restrictions of Fourier transforms to quadratic surfaces and decay of solutions of wave equations.* Duke Math. J. **44** (1977), no. 3, 705–714.

(8) T. Tao, *A sharp bilinear restriction estimate for paraboloids.* Geom. Funct. Anal. **13** (2003), no. 6, 1359–1384.

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