

# WEIGHTED THEORY AND EXTRAPOLATION FOR MULTILINEAR OPERATORS

BAS NIERAETH

In one of its forms in the linear case, Rubio de Francia's extrapolation theorem states that if an operator  $T$  is bounded on  $L^q(w)$  for a single  $1 \leq q < \infty$  for all weights  $w$  in the Muckenhoupt class  $A_q$ , then  $T$  is in fact bounded on  $L^p(w)$  for all  $1 < p < \infty$  for all  $w$  in the Muckenhoupt class  $A_p$ . In recent developments, motivated by operators such as the bilinear Hilbert transform, multilinear versions of this result have appeared. In this talk I will discuss the recent multilinear extrapolation result I obtained. The proof here differs from the proofs given in the works of Cruz-Uribe, Martell [CM18], Li, Martell, Ombrosi [LMO18], and the recent work of Li, Martell, Martikainen, Ombrosi, Vuorinen [LMM<sup>+</sup>19] in that it does not rely on any linear off-diagonal extrapolation techniques. Rather, a multilinear analogue of the Rubio de Francia algorithm was developed, leading not only to an extrapolation theorem that includes the endpoints, but also one where it is possible to sharply track the multilinear Muckenhoupt constant throughout the argument.

## REFERENCES

- [CM18] D. Cruz-Uribe and J.M. Martell. Limited range multilinear extrapolation with applications to the bilinear Hilbert transform. *Math. Ann.*, 371(1-2):615–653, 2018.
- [LMM<sup>+</sup>19] K. Li, J.M. Martell, H. Martikainen, S. Ombrosi, and Vuorinen E. End-point estimates, extrapolation for multilinear Muckenhoupt classes, and applications. arXiv:1902.04951, 2019.
- [LMO18] K. Li, J.M. Martell, and S. Ombrosi. Extrapolation for multilinear Muckenhoupt classes and applications to the bilinear Hilbert transform. arXiv:1802.03338, 2018.