

# DIMENSIONAL FREE $L^p$ ESTIMATES FOR RIESZ TRANSFORMS ASSOCIATED WITH POLYNOMIAL EXPANSIONS

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ABSTRACT. In collaboration with Liliana Forzani and Roberto Scotto, we study the strong type boundedness of the Riesz Transforms associated to a generic second order differential operator  $\mathcal{L}$ . We consider the case in which  $\mathcal{L}$  is a "Laplacian" with respect to a measure  $\mu$  and the eigenfunctions are a family of orthogonal polynomials with respect to the measure  $\mu$ . The starting point is a paper of Nowak and Stempak [?], where the authors proposed a unified approach to the theory of Riesz transforms and conjugacy in the setting of multi-dimensional orthogonal expansions, and proved their boundedness on  $L^2$ . Our tools are a generalization of a technique just used by many authors (see, for example, [1, 2, 3]) based on suitably defined g-functions and Littlewood-Paley-Stein theory, involving the Poisson semigroup and modifications of it.

## REFERENCES

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