

# BOUNDEDNESS OF INTEGRAL OPERATORS FOR BERGMAN MEASURES ON TREES

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ABSTRACT. The problem of the boundedness of integral operators is classically intertwined with the Calderón-Zygmund decomposition of the functions that are integrable with respect to the given measure.

In [2], we consider the  $q$ -homogeneous tree  $X$  with root  $o$  endowed with the family of measures  $\mu_\alpha(x) := q^{-\alpha|x|}$ , where  $|x| := d(o, x)$  and  $\alpha > 1$ . Such measures are reference measures in the sense of [1] where they are used to define harmonic Bergman spaces on  $X$ . We show that the integral operators that are bounded on  $L^2(\mu_\alpha)$  and have a kernel satisfying a suitable Hörmander condition are of weak type  $(1,1)$ . Furthermore, such operators extend to a bounded operator from the atomic Hardy space  $H^1(\mu_\alpha)$  to  $L^1(\mu_\alpha)$  and from  $L^\infty(\mu_\alpha)$  to  $BMO(\mu_\alpha)$ . A classical example of these operators is the harmonic Bergman projector.

## REFERENCES

- [1] J. M. Cohen, F. Colonna, M. Picardello, and D. Singman. Bergman spaces and Carleson measures on homogeneous isotropic trees. *Potential Anal.*, 44, 05 2016.
- [2] F. De Mari, M. Monti, and M. Vallarino. Harmonic bergman projectors on homogeneous trees. *arXiv*, <https://arxiv.org/abs/2205.13859>, 2022.

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