# LAGRANGE INTERPOLATION BASED ON ANTI-GAUSS JACOBI POLYNOMIALS

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In this talk, we present a new interpolation process essentially based on the so-called Anti-Gauss Jacobi nodes, to approximate functions defined in $(-1,1)$ that may have algebraic singularities at $\pm 1$. Laurie [1] first introduced these nodes to construct the so-called anti-Gauss quadrature rules, which have been further used in the numerical treatment of integral equations [2, 3].

Here, we introduce and study a polynomial that interpolates a given function $f$ at these types of nodes. We prove that, under suitable assumptions, the corresponding sequence of Lebesgue constants logarithmically diverges. We also provide estimates of the error in suitable weighted spaces and present numerical tests to support the theoretical investigation.

## References

[1] D. Laurie, *Anti-Gaussian quadrature formulas*, Math. Comp., 65 (1996), pp. 739–747.

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[3] P. Díaz de Alba, L. Fermo, and G. Rodriguez. *Anti-Gauss cubature rules with applications to Fredholm integral equations on the square*, SIAM J. Sci. CompUT., 47 (2025), pp. A689-A712.