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UNIQUENESS OF ENTIRE FUNCTIONS CONCERNING DIFFERENTIAL-DIFFERENCE POLYNOMIALS SHARING WEIGHTED

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Abstract. This study investigates the uniqueness of transcendental entire functions of finite order when certain types of shared values or sets are involved. Specifically, we examine the conditions under which two such functions, $f(z)$ and $g(z)$, must be identical if weakly weighted sharing and relaxed weighted sharing, this study examines the uniqueness problem of differential-differential polynomials sharing a small function with respect to a polynomial with constant coefficients of degree m. Our primary focus is on three main scenarios involving different sharing conditions: weakly weighted sharing and relaxed weighted sharing, and sharing certain sets with multiplicity two. we extend these results to the case where the functions involve a polynomial $P(f(z))$ and linear combinations of shifts $L_c(f(z))$. Our result improves and extends some recent results due to Harina P. Waghamore, Husna Vallijan and Chao Meng [1].

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