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Hayman's Alternative and Normal Families of Non-vanishing Meromorphic Functions

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Abstract. We show that if \mathcal{F} is a family of non-vanishing meromorphic functions in the unit disk \mathbb{D} with $P[f](z) \neq 1$ for all $z \in \mathbb{D}$ and all $f \in \mathcal{F}$ where P is a differential polynomial satisfying certain conditions, then \mathcal{F} is normal. This generalizes former results of W. Schwick [19] and of M.-L. Fang [6]. Furthermore, we give the corresponding Picard type theorems generalizing Hayman's Alternative.

Keywords. Normal families, differential polynomials, Hayman's Alternative, Zalcman's Lemma, Bloch's Principle.

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