

# Fractional Parts of Binary Forms

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We obtain bounds on fractional parts of binary forms of the shape

$$\Psi(x, y) = \alpha_k x^k + \alpha_l x^l y^{k-l} + \alpha_{l-1} x^{l-1} y^{k-l+1} + \cdots + \alpha_0 y^k$$

with  $\alpha_k, \alpha_l, \dots, \alpha_0 \in \mathbb{R}$  and  $l \leq k - 2$ . By exploiting a variant of Weyl's inequality and inductive arguments, we derive estimates superior to those obtained hitherto for the best exponent  $\sigma$ , depending on  $k$  and  $l$ , such that

$$\min_{\substack{0 \leq x, y \leq X \\ (x, y) \neq (0, 0)}} \|\Psi(x, y)\| \leq X^{-\sigma + \epsilon}.$$