

We prove that a class of convexity-type results for sequential fractional delta differences is uniformly sharp. More precisely, we consider the sequential difference $\Delta_{1-\mu+a}^{\nu} \Delta_a^{\mu} f(t)$, for $t \in \mathbb{N}_{3+a-\mu-\nu}$, and demonstrate that there is a strong connection between the sign of this function and the convexity or concavity of f if and only if the pair (μ, ν) lives in a particular subregion of the parameter space $(0,1) \times (1,2)$.