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Lacunary Pál-Type Interpolation and Over-Convergence

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Abstract. Hermite-Birkhoff interpolation and Pál-type interpolation have been receiving much attention over the years. Also during the previous 15 years the subject of interpolation in non-uniformly distributed nodes has been looked into. There are, however, not many examples known where lacunary problems (in which the orders of the derivatives for which data are given, are non-consecutive) are regular.

Here lacunary Pál-type interpolation is looked into: the $(0, m_1, \dots, m_q)$ interpolation problem on the zeros of $z^n - \alpha_0^n, z^n - \alpha_1^n, \dots, z^n - \alpha_q^n$ with $0 < \alpha_0 < \alpha_1 < \dots < \alpha_q$ will be shown to be regular for n sufficiently large.

Moreover, for a power series with radius of convergence $\rho > \alpha_q$ the phenomenon of over-convergence of the difference between the interpolating polynomial of the full power series and that of the partial sums of length $(q + 1)n\ell$ will be exhibited as $n \rightarrow \infty$ where $\ell \geq 1$ is an arbitrary integer.

Keywords. Pál-type interpolation, regularity, over-convergence.

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