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Leo Larsson, Uppsala: Inequalities of Carlson Type with Applications

Abstract: In 1934, F. Carlson proved that if $a_1, a_2, \ldots$ is any non-zero sequence of non-negative numbers, then

$$\left(\sum_{k=1}^{\infty} a_k\right)^4 < \pi^2 \sum_{k=1}^{\infty} a_k^2 \sum_{k=1}^{\infty} k^2 a_k^2,$$

where the constant π^2 is the best possible. This inequality, together with its integral companion, have been generalized in different directions and applied to various areas of mathematics, such as Fourier analysis and interpolation theory. We present some classical and new results on this line, and discuss some of their applications.

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