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Summary: A variety of sharp generalisations and extensions of a Beesack inequality are investigated in the current development. A number of applications are examined, including bounding a renewal integral equation which arises in risk/ruin problems. Sharp and tighter bounds than existing results for the Chebyshev functional involving Riemann-Stieltjes integrals are also determined which is of importance in many applications including in providing bounds for perturbed quadrature rules.

MSC:
26D15 Inequalities for sums, series and integrals
41A17 Inequalities in approximation (Bernstein, Jackson, Nikol’skiĭ-type inequalities)

Keywords:
Riemann-Stieltjes integral; Volterra integral equations; integral inequalities; Chebyshev functional; bounds

Full Text: Link