

## QUANTUM OSTROWSKI INEQUALITIES FOR $q$ -DIFFERENTIABLE CONVEX FUNCTIONS

MUHAMMAD ASLAM NOOR, MUHAMMAD UZAIR AWAN  
AND KHALIDA INAYAT NOOR

**Abstract.** In this paper, we establish a new quantum analogue of classical integral identity. Using this quantum integral identity, we derive some quantum analogues of Ostrowski type inequalities for  $q$ -differentiable convex functions.

*Mathematics subject classification (2010):* 26D15, 26A51.

*Keywords and phrases:* Convex functions, quantum,  $q$ -differentiable,  $q$ -integration, Ostrowski.

### REFERENCES

- [1] P. CERONE, S. S. DRAGOMIR, *Ostrowski type inequalities for functions whose derivatives satisfy certain convexity assumptions*, Demonstr. Math. **37** (2) 299–308, (2004).
- [2] S. S. DRAGOMIR, T. M. RASSIAS, *Ostrowski Type Inequalities and Applications in Numerical Integration*, Springer Netherlands, 2002.
- [3] T. ERNST, *A Comprehensive Treatment of  $q$ -Calculus*, Springer Basel Heidelberg New York Dordrecht London, 2012.
- [4] T. ERNST, *A Method for  $q$ -Calculus*, J. Nonl. Math. Phy. **10** (4) 487–525, (2003).
- [5] H. GAUCHMAN, *Integral inequalities in  $q$ -calculus*, Comput. Math. Appl. **47** 281–300, (2004).
- [6] M. A. NOOR, M. U. AWAN, K. I. NOOR, *Some quantum estimates for Hermite-Hadamard inequalities*, Appl. Math. Comput. **251** 675–679, (2015).
- [7] M. A. NOOR, K. I. NOOR, M. U. AWAN, *Some quantum integral inequalities via preinvex functions*, Appl. Math. Comput., in press.
- [8] M. A. NOOR, K. I. NOOR, M. U. AWAN, F. SAFDAR, *Some quantum analogues of integral inequalities*, Appl. Math. Comput., to appear.
- [9] C. E. M. PEARCE, J. PECARIC, *Inequalities for differentiable mappings with application to special means and quadrature formulae*, Appl. Math. Lett. **13** 51–55, (2000).
- [10] W. SUDSUTAD, S. K. NTOUYAS, J. TARIBOON, *Quantum integral inequalities for convex functions*, J. Math. Inequal. **9** (3) (2015), 781–793.
- [11] J. TARIBOON, S. K. NTOUYAS, *Quantum integral inequalities on finite intervals*, J. Inequal. App. **2014**, 121 (2014).
- [12] J. TARIBOON, S. K. NTOUYAS, *Quantum calculus on finite intervals and applications to impulsive difference equations*, Adv. Differ. Equ. **2013**, 282 (2013).