Fractional
Differential
Calculus
Volume 12, Number 1 (2022), 91–100
doi:10.7153/fdc-2022-12-06

# GENERALIZED WEIGHTED FRACTIONAL OSTROWSKI TYPE INEQUALITY WITH APPLICATIONS

NAZIA IRSHAD, ASIF R. KHAN AND MUHAMMAD AWAIS SHAIKH*

*Abstract.* We use Riemann-Liouville fractional integral to provide generalization of Weighted Ostrowski type inequality with bounded derivatives. Our results improved the inequalities of [14], and gave some applications.

*Mathematics subject classification* (2020): 26A33, 26D15.
*Keywords and phrases*: Fractional calculus, Riemann-Liouville fractional integral operator, fractional Ostrowski-Grüss inequality.

## REFERENCES

[1] L. AVAZPOUR, *Fractional Ostrowski Type Inequalities for Functions whose Derivatives are Prequasinvex*, J. Inequal. Spec. Funct., **9** (2) (2018), 15–29.
[2] G. ANASTASSIOU, M. R. HOOSHMANDASL, A. GHASEMI AND F. MUFTAKHARZADEH, *Montgomery Identities for Fractional Integrals and Related Fractional Inequalities*, J. Inequal. Pure Appl. Math., **10** (4) (2009), Art. 97, 6 pp.
[3] S. S. DRAGOMIR AND T. M. RASSIAS, *Ostrowski Type Inequalities and Applications in Numerical Integration*, Kluwer Academics Publishers, Dordrecht, 2002.
[4] S. S. DRAGOMIR, P. CERONE AND J. ROUMELIOTIS, *A new Generalization of Ostrowski Integral Inequality for Mappings whose Derivatives are Bounded and Applications in Numerical Integration and for Special Means*, Appl. Math. Lett., **13** (2000), 19–25.
[5] S. S. DRAGOMIR AND S. WANG, *An Inequality of Ostrowski-Grüss Type and its Applications to the Estimation of Error Bounds for Some Special Means and for Some Numerical Quadrature Rules*, Comput. Math. Appl., **33** (11) (1997), 15–20.
[6] R. GORENFLO AND F. MAINARDI, *Fractional Calculus: Integral and Differential Equations of Fractional Order*, Springer Verlag, Wien and New York, 1997.
[7] G. GRÜSS, *Über das Maximum des absoluten Betrages von*, Math. Z., **39** (1) (1935), 215–226.
[8] D. S. MITRINOVIĆ, J. E. PEČARIĆ AND A. M. FINK, *Inequalities Involving Functions and Their Integrals and Derivatives*, Kluwer Academic, Dordrecht, 1991.
[9] D. S. MITRINOVIĆ, J. E. PEČARIĆ AND A. M. FINK, *Classical and New Inequalities in Analysis*, Kluwer Academic Publishers, Dordrecht, 1993.
[10] N. IRSHAD, ASIF R. KHAN AND H. MUSHARRAF, *Generalized Fractional Ostrowski Type Inequality*, Journal of Inequalities and Special Functions, **11**, 4 (2020), 16–26.
[11] A. M. OSTROWSKI, *Über die Absolutabweichung einer Differentiebaren Funktion von Ihren Integralmittelwert*, Comment. Math. Helv., **10** (1938), 226–227.
[12] S. G. SAMKO, A. A. KILBAS AND O. I. MARICHEV, *Fractional Integrals and Derivatives Theory and Application*, Gordan and Breach Science, New York, 1993.
[13] M. Z. SARIKAYA, H. FILIZ AND M. E. KIRIS, *On Some Generalized Integral Inequalities for Riemann-Liouville Fractional Integrals*, Filomat, **29** (6) (2015), 1307–1314.
[14] M. Z. SARIKAYA, H. YALDIZ AND N. BASAK, *New Fractional Inequalities of Ostrowski Grüss Type*, Le Matematiche, **69** (1) (2014), 227–235.
[15] M. Z. SARIKAYA, H. YALDIZ AND E. SET, *On Fractional Inequalities Via Montgomery Identities*, Int. J. Open Problems Complex Analysis, **6** (2) (2014), 36–43.


Paper FDC-12-06

[16] M. Z. SARIKAYA AND H. OGUNMEZ, *On New Inequalities Via Riemann Liouville Fractional Integration*, Abst. Appl. Anal., **2012** (2012) Art. 428983, 10 pp.
[17] F. TONG AND L. GUAN, *A Simple Proof of the Generalized Ostrowski-Grüss Type Integral Inequality*, Int. J. of Math. Anal., **2** (18) (2008), 889–892.