

## INEQUALITIES VIA HARMONIC CONVEX FUNCTIONS: CONFORMABLE FRACTIONAL CALCULUS APPROACH

MUHAMMAD UZAIR AWAN, MUHAMMAD ASLAM NOOR,  
MARCELA V. MIHAI AND KHALIDA INAYAT NOOR

*Abstract.* The main objective of this paper is to establish some conformable fractional estimates of Hermite-Hadamard type integral inequalities via harmonic convex functions.

*Mathematics subject classification (2010):* 26D15, 26A51, 26A33.

*Keywords and phrases:* Convex, harmonic, fractional, conformable, Hermite-Hadamard.

### REFERENCES

- [1] T. ABDELJAWAD, *On conformable fractional calculus*, J. Comput. Appl. Math., **279** (2015), 57–66.
- [2] G. CRISTESCU, L. LUPSA, *Non-connected Convexities and Applications*, Kluwer Academic Publishers, Dordrecht, Holland, 2002.
- [3] S. S. DRAGOMIR, R. P. AGARWAL, *Two inequalities for differentiable mappings and applications to special means of real numbers and to trapezoidal formula*, Appl. Math. Lett. **11** (1998), 91–95.
- [4] S. S. DRAGOMIR, C. E. M. PEARCE, *Selected topics on Hermite-Hadamard inequalities and applications*, Victoria University, Australia, 2000.
- [5] I. ISCAN, *Hermite-Hadamard type inequalities for harmonically convex functions*, Hacettepe J. Math. Stat. **43** (6), 935–942, (2014).
- [6] I. ISCAN, S. WU, *Hermite-Hadamard type inequalities for harmonically convex functions via fractional integrals*, Appl. Math. Comput., **238**, 237–244, (2014).
- [7] A. KILBAS, H. M. SRIVASTAVA, J. J. TRUJILLO, *Theory and applications of fractional differential equations*, Elsevier B. V., Amsterdam, Netherlands, (2006).
- [8] R. KHALIL, M. AL HORANI, A. YOUSEF, M. SABABEH, *A new definition of fractional derivative*, J. Computat. Appl. Math., **264** (2014), 65–70.
- [9] M. V. MIHAI, M. A. NOOR, K. I. NOOR, M. U. AWAN, *Some integral inequalities for harmonic  $h$ -convex functions involving hypergeometric functions*, Appl. Math. Comput. **252**, 257–262, (2015).
- [10] K. S. MILLER, B. ROSS, *An introduction to the fractional calculus and fractional differential equations*, New York: Wiley, 1993.
- [11] M. A. NOOR, K. I. NOOR, M. U. AWAN, *Integral inequalities for coordinated harmonically convex functions*, Complex Var. Elliptic Equat. **60** (6), 776–786, (2015).
- [12] M. A. NOOR, K. I. NOOR, M. U. AWAN, S. COSTACHE, *Some integral inequalities for harmonically  $h$ -convex functions*, U. P. B. Sci. Bull., Series A. **77** (1), 5–16, (2015).
- [13] M. Z. SARIKAYA, E. SET, H. YALDIZ, N. BASAK, *Hermite-Hadamard's inequalities for fractional integrals and related fractional inequalities*, Math. Comput. Model., **57** (2013), 2403–2407.
- [14] E. SET, *New inequalities of Ostrowski type for mappings whose derivatives are  $s$ -convex in the second sense via fractional integrals*, Comput. Math. Appl., **63** (7), (2012), 1147–1154.
- [15] E. SET, A. O. AKDEMIR, I. MUMCU, *The Hermite-Hadamard's inequality and its extention for conformable fractionanl integrals of any order  $\alpha > 0$* , preprint, (2016).
- [16] E. SET, M. Z. SARIKAYA, A. GOZPINAR, *Some Hermite-Hadamard type inequalities for convex functions via conformable fractional integrals and related inequalities*, preprint, (2016).
- [17] H.-N. SHI AND J. ZHANG, *Some new judgement theorems of Schur geometric and Schur harmonic convexities for a class of symmetric functions*, J. Inequal. Appl. **2013** (2013), 527.