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SOME FIXED POINT THEOREMS OF INTEGRAL TYPE CONTRACTION IN CONE S_b-METRIC SPACES

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Abstract. In this article, we generalize the concept of integral type contraction with respect to a cone from b-metric spaces to S_b-metric spaces and prove some fixed point theorems in the setting of cone S_b-metric spaces.

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References

[1] I.A. Bakhtin, *The contraction mapping principle in almost metric spaces*, Funct. Anal. Gos. Ped. Inst. Unianowsk **30** (1989), 26-37.
[2] S. Banach, *Surles operation dans les ensembles abstraits et leur application aux equation integrals*, Fund. Math. **3**(1922), 133-181.
[3] A. Branciari, *A fixed point theorem for mappings satisfying a general contractive condition of integral type*, Int. J. Math. Math. Sci. **29(9)** (2002), 531-536.
[4] D. Dhamodharan and R. Krishnakumar, *Cone S-metric space and fixed point theorems of contractive mappings*, Annals of Pure Appl. Math. **14(2)** (2017), 237-243.
[5] L. -G. Huang and X. Zhang, *Cone metric spaces and fixed point theorems of contractive mappings*, J. Math. Anal. Appl. **332(2)** (2007), 1468-1476.
[6] N. Hussain and MH. Shah, *KKM mappings in cone b-metric spaces*, Comput. Math. Appl. **62** (2011), 1677-1684.
[7] F. Khojasteh, Z. Goodarzi and A. Razani, *Some fixed point theorems of integral type contraction in cone metric spaces*, Fixed Point Theory Appl. (2010), Article ID 189684, 13 pages, 2010.
[8] R. Krishnakumar and D. Dhamodharan, *Fixed point theorems in normal cone metric space*, Int. J. Math. Sci. Engg. Appl. **10(III)** (2016), 213-224.
[9] N. Yilmaz Ozgur and N. Tas, *Some fixed point theorems on S-metric spaces*, Mat. Vesnik **69(1)** (2017), 39-52.
[10] Sh. Rezapour, *A review on topological properties of cone metric spaces*, in Proceedings of the International Conference on Analysis, Topology and Appl. (ATA 08), Vrinjacka Banja, Serbia, May-June (2008).
[11] Sh. Rezapour and R. Hamlbarani, *Some notes on the paper "Cone metric spaces and fixed point theorems of contractive mappings"*, J. Math. Anal. Appl. **345(2)** (2008), 719-724.
[12] G. S. Saluja, *Some fixed point results under contractive type mappings in cone S_b-metric spaces*, Palestine J. Math. **10(2)** (2021), 547-561.

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[13] S. Sedghi, N. Shobe and A. Aliouche, *A generalization of fixed point theorems in S-metric spaces*, Mat. Vesnik **64(3)** (2012), 258-266.
[14] S. Sedghi, A. Gholidahnch and K.P.R. Rao, *Common fixed point of two R-weakly commuting mappings in S_b-metric spaces*, Math. Sci. Lett. **6(3)** (2017), 249-253.
[15] R. Shah, A. Zada and I. Khan, *Some fixed point theorems of integral type contraction in cone b-metric spaces*, Turkish J. Anal. and Number Theory **3(6)** (2015), 165-169.
[16] K. Anthony Singh and M.R. Singh, *Some fixed point theorems of cone S_b-metric space*, J. Indian Acad. Math. **40(2)** (2018), 255-272.
[17] K. Anthony Singh and M.R. Singh, *Some coupled fixed point theorems in cone S_b-metric space*, J. Math. Comput. Sci. **10(4)** (2020), 891-905.
[18] N. Souayah and N. Mlaiki, *A fixed point theorem in S_b-metric spaces*, J. Math. Computer Sci. **16** (2016), 131-139.
[19] N. Tas and N. Yilmaz Ozgur, *New generalized fixed point results on S_b-metric spaces*, arxiv:1703.01868v2 [math.gn] 17 apr.
[20] J. Vandergraft, *Newton method for convex operators in partially ordered spaces*, SIAM J. Numer. Anal. **4** (1967), 406-432.
[21] P.P. Zabrejko, *K-metric and K-normed linear spaces: survey*, Collectanea Mathematica **48(4-6)** (1997), 825-859.

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