# The concept of b-generalized pseudodistances and best proximity points for set-valued contractions of Nadler type in b-metric spaces.

**Robert Plebaniak**

University of Lodz, Poland
robpleb@math.uni.lodz.pl

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In this talk we study, in $b$-metric space, the concept of $b$ -generalized pseudodistance (introduced in [1]) which is an extension of $b$-metric. Next, inspired by the ideas of S. B. Nadler [2] and A. Abkar and M. Gabeleh [3], we define a new set-valued non-self-mapping contraction of Nadler type with respect to this $b$-generalized pseudodistance, which is a generalization of Nadler's contraction. Moreover, we provide the condition guaranteeing the existence of best proximity points for $T : A \to 2^B$. A best proximity point theorem furnishes sufficient conditions that ascertain the existence of an optimal solution to the problem of globally minimizing the error $\inf\{d(x, y) : y \in T(x)\}$, and hence the existence of a consummate approximate solution to the equation $T(x) = x$. In other words, the best proximity points theorem achieves a global optimal minimum of the map $x \to \inf\{d(x; y) : y \in T(x)\}$ by stipulating an approximate solution $x$ of the point equation $T(x) = x$ to satisfy the condition that $\inf\{d(x; y) : y \in T(x)\} = dist(A; B)$. The examples which illustrate the main result given. The talk includes also the comparison of our results with those existing in the literature.

## References

[1] R. Plebaniak, *New generalized pseudodistance and coincidence point theorem in a b-metric space*, Fixed Point Theory and Applications 2013, 2013:270 doi:10.1186/1687-1812-2013-270.

[2] S. B. Nadler, *Multi-valued contraction mappings*, Pacific J. Math. 30, 1969, 475–488.

[3] A. Abkar, M. Gabeleh, *The existence of best proximity points for multivalued non-self-mappings*, Revista de la Real Academia de Ciencias Exactas, Fisicas y Naturales. Serie A. Mathematicas, Volume 107, Issue 2, 2013, 319–325.

[4] R. Plebaniak, *On best proximity points for set-valued contractions of Nadler type with respect to b-generalized pseudodistances in b-metric spaces*, Fixed Point Theory and Applications, 2014, 2014:39 doi:10.1186/1687-1812-2014-39.