Colloquium

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On the Additivity of the Minkowski Functionals

Cone metric spaces were introduced By Long and Xiang in 2007. A similar notion was also considered by Rzepecki in 1980. After carefully defining convergence and completeness in cone metric spaces, Long and Xiang proved some fixed point theorems of contractive mappings. Topological questions in cone metric spaces were also studied. For example it was proved that every cone metric space is first countable topological space. Hence, continuity is equivalent to sequential continuity and compactness is equivalent to sequential compactness. It is worth mentioning the pioneering work of in 1983 who introduced the concept of generalized metric spaces. His approach was very successful and used by many. In fact cone metric spaces are a special case of generalized metric spaces. Recently Agarwal and Khamsi gave a vectorial version of the classical Caristi fixed point theorem. Following what was done with Long and Xiang paper, one should ask whether such generalization is also redundant. Or to find out whether the vectorial version and the classical version of the Caristi fixed point theorem are equivalent. This question is still open. In this talk, we discuss a partial answer to this open question.