

Cone metric spaces and fixed points in these spaces

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Abstract. In this talk we first introduce a cone metric space and then we study topology induced on it by a cone. Moreover, we review some articles which recently have been written on the topological properties of cone metric spaces. In some of them there are some gaps which one of the aims of this lecture is to deal with them by providing new proofs that extend a number of the previous works. Several authors have worked with a class of special cones which known as strongly minihedral cones which the condition strongly minihedrality (that is, each nonempty bounded above subset has the least upper bound) is very restrictive. Another goal of this note is to eliminate or mitigate this condition. Furthermore, some examples provided to show that the imagination of many authors that the behavior of the ordering induced by a strongly minihedral cone is just as the behavior of the usual ordering on the real line, that has caused an error in their proof, is not correct. The other aim is search relationship between strongly minihedral and totally orderedness. Finally, some fixed point theorems in the setting of cone metric spaces will be presented.

Keywords: Cone metric space, First countable, Strongly minihedral cone, Totally ordered, Sequentially compact, Contractive mapping

Mathematics Subject Classifications 2010: 47H10,47H05,46B40.