

On a ranking method of irregular tournaments

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In this article, we treat a ranking problem of tournaments in sports or competitions, and propose a method of ranking the contestants in some irregular tournament systems. Our approach of this problem is based on graph theory and partially ordered sets, representing the results of tournaments by digraphs. We regard cycles in a digraph as the cause of disturbing the process of ranking. For an each arc a parameter, a degree of difficulty of ordering, is defined. Using this parameter we convert a digraph into a partially ordered set by breaking cycles, and finally transform it to a totally ordered set. And we give a hypothesis that any irregular tournament may include some total orders in it latently. Finally we analyze real data of Rugby football and Sumo as examples.