Four essays on the axiomatic method:
cooperative game theory and scientometrics

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Abstract: The dissertation provides four contributions on the axiomatic method. The first three chapters deal with cooperative games with transferable utility. In the first two chapters, a systematic study of the nullification operation is done. The removal axioms are translated into their nullified counterparts. Some existing characterizations are revisited, and completely new results are presented. The third chapter introduces and characterizes a proportional Shapley value in which the Harsanyi dividends are shared in proportion to the stand-alone worths of the concerned players. The fourth chapter proposes a multi-dimensional variant of the Hirsch index. An axiomatic characterization and an application to sports rankings are provided.