Applications of Algebraic and Differential Topology in Economics

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Consider a society in which each individual takes decisions in pursuit of maximizing his or her own personal well-being. Of course, each decision typically affects the well-being of others. Thus, in principle, the best available choice that one can take to maximize his or her well-being depends on the decisions taken by all other individuals. Equilibrium is defined as a state in which all these interrelated decisions of all individuals are mutually consistent. Indeed, the most prominent and arguably the unique method of economics to scrutinize social phenomena is the concept of equilibrium. This talk addresses how certain tools of algebraic and differential topology elegantly answer many siginificant questions such as whether there is an equilibrium or not and how equilibrium reacts to changes in external factors.