Valued Constraint Satisfaction Problem and Resilience in Database Theory

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A recent research topic in database theory is the computational complexity of resilience of queries. For a fixed conjunctive query, the problem is to compute the number of facts that need to be removed from a given database so that it does not satisfy the query. Mathematically, this problem can be viewed as removing tuples from relations of a relational structure so that it does not satisfy a fixed primitive positive sentence. In this talk, I will explain how resilience problems can be viewed as valued constraint satisfaction problems (VCSPs) of structures that are finite or at least finite-like (in the sense that they have an oligomorphic automorphism group). We use the known results about VCSPs on finite domains to give some general powerful hardness and tractability conditions.

[1]Joint work with Manuel Bodirsky and Carsten Lutz.