Proving inconsistency: towards a better Maltsev CSP algorithm

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The constraint satisfaction problem (CSP) over finite templates essentially gives a framework for posing inconsistency questions. There are essentially just two basic polynomial-time CSP algorithms: local consistency and the few subpowers algorithm (generalizing the Maltsev algorithm of Bulatov and Dalmau). The former algorithm is quite simple and, when it works, gives transparent certificates for inconsistency. The few subpowers algorithm, by contrast, does not give clear certificates of inconsistency, other than the complete record of the execution of the algorithm.

In this talk I will briefly describe the two algorithms and the virtues of the first that are lacking in the second. Then I will propose a new type of certificate for inconsistency, generalizing local inconsistency, and describe some very modest progress in determining whether these certificates are complete for Maltsev CSP problems.

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