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Petar Markovic* (pera@im.ns.ac.yu), Department of Mathematics and Informatics, University of Novi Sad, Trg Dositeja Obradovica 4, 21000 Novi Sad, Serbia, and **Ralph McKenzie** and **Matthew Nickodemus**. *Algebraic conditions forcing NP-completeness of the Constraint Satisfaction Problem.*

The fixed-template constraint satisfaction problem is the following problem: given a fixed finite relational structure \mathcal{A} (called the *template*), it is the membership problem for the class of all similar finite relational structures \mathcal{B} which admit a homomorphic map into the template. This trivially reduces to the case when the template is a *core*, that is all of its endomorphisms are automorphisms.

All known cases when the fixed-template Constraint Satisfaction Problem is NP-complete, with template a core, are such that the algebra \mathbf{A} of idempotent polymorphisms of \mathcal{A} generates a variety which admits type $\mathbf{1}$. In this talk, I will review the older equivalent conditions for this, and also present a few new ones. Possible applications towards proving the Algebraic Dichotomy Conjecture, that when the algebra of polymorphisms of the core template generates a variety which omits type $\mathbf{1}$, then the Constraint Satisfaction Problem is tractable, will also be discussed. (Received February 01, 2009)