

Partial Symmetry Breaking

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Abstract. In this paper we define *partial symmetry breaking*, a concept that has been used in many previous papers without being the main topic of any research.

1 Introduction and Motivation

We are now at a point in constraint programming research where there are many methods of both recognizing symmetries and breaking symmetries in CSPs. A symmetry breaking **method** for CSPs, can be broken into two parts, the symmetry breaking **technique** and the symmetry **representation**. The technique is how we apply the symmetry breaking. The symmetry representation is concerned with how the descriptions of symmetries are implemented and how we use this implementation to apply the symmetry breaking technique. Symmetry breaking can be improved by reducing the number of symmetries we need to consider. This affects the *representation* of the symmetries but not the *technique*.

In [1] it is shown that where there is a large number of symmetries, we can discard some of them and by doing so reduce run-time greatly. By only describing a subset of symmetries we are performing *partial symmetry breaking* (PSB) i.e. performing some redundant search because the symmetry breaking technique is too costly or even impossible to perform.

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References

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