# N-QUEENS

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Instance*** | ***Alldifferent GC*** | | ***Decomposition*** | |
|  | *Fails* | *Time* | *Fails* | *Time* |
| **28** | 78,847 | 1s 955msec | 417,027 | 6s 328msec |
| **29** | 31,294 | 1s 144msec | 212,257 | 4s 137msec |
| **30** | 1,588,827 | 41s 917msec | 7,472,978 | 1m 54s |

The table shows the failures and execution time of the global constraints and their decomposition.

After analyzing the results in the table, we can see that constraint decomposition causes more failures and longer execution time than global constraints.

One of the two approaches used to develop specialized propagation of global constraints is constraint decomposition.

Constraint decomposition does not always provide effective propagation, in fact, it is a very effective and efficient method only for some global constraints but cannot be used in all cases.

These results are due to the fact that often the Generalized Arc Consistency (GAC) on the original global constraint is stronger than the (G)AC on the constraints in the decomposition.

We have seen from the table that global constraints have fewer failures and solve the problem in less time, this is because they manage to reduce the gap between the problem statement and the model and, algorithmically, they have more efficient propagation.