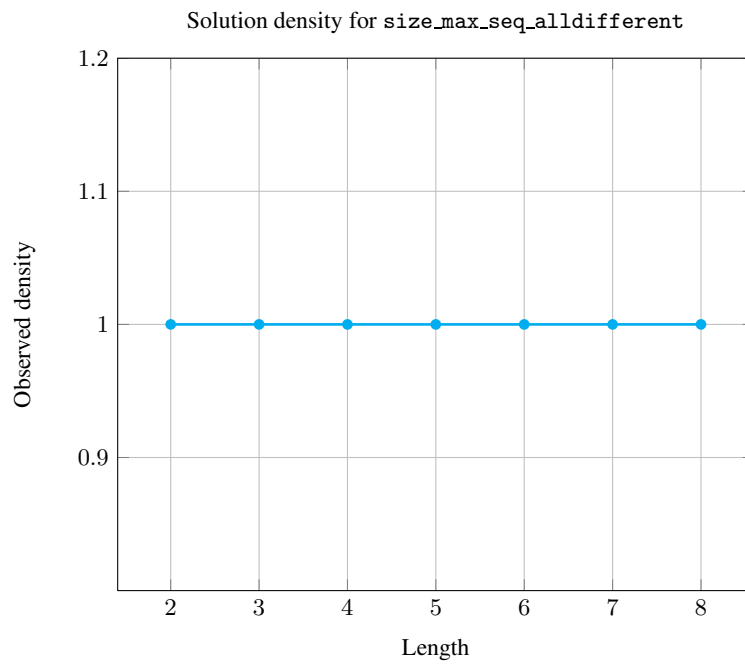
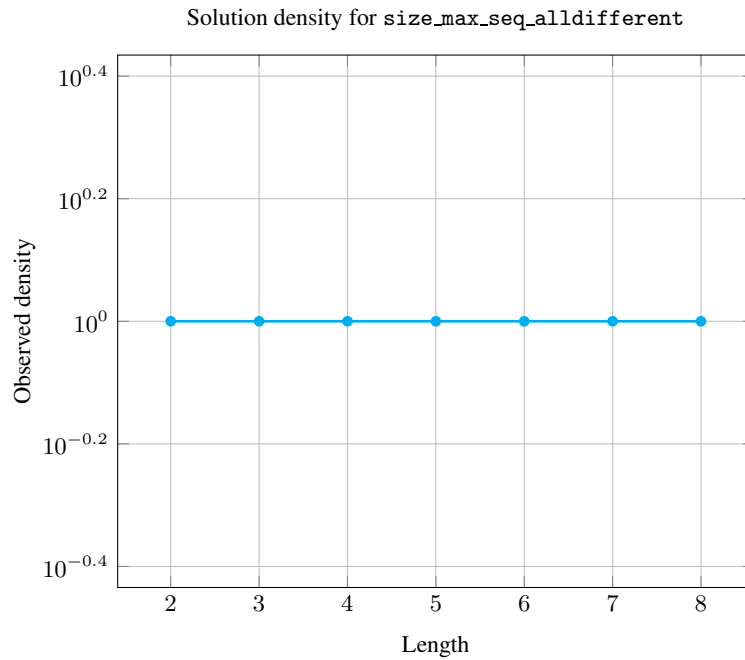


5.347 size_max_seq_alldifferent

	DESCRIPTION	LINKS	GRAPH
Origin	N. Beldiceanu		
Constraint	<code>size_max_seq_alldifferent(SIZE, VARIABLES)</code>		
Synonyms	<code>size_maximal_sequence_alldiff</code> , <code>size_maximal_sequence_alldistinct</code> , <code>size_maximal_sequence_alldifferent</code> .		
Arguments	SIZE : <code>dvar</code> VARIABLES : <code>collection(var-dvar)</code>		
Restrictions	$SIZE \geq 0$ $SIZE \leq VARIABLES $ <code>required(VARIABLES, var)</code>		
Purpose	SIZE is the size of the maximal sequence (among all possible sequences of consecutive variables of the collection VARIABLES) for which the <code>alldifferent</code> constraint holds.		
Example	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $(4, \langle 2, 2, 4, 5, 2, 7, 4 \rangle)$ $(1, \langle 2, 2, 2, 2, 2, 2 \rangle)$ $(2, \langle 2, 2, 4, 4, 4, 7, 4 \rangle)$ $(7, \langle 2, 0, 4, 6, 5, 7, 3 \rangle)$ </div> <p>The first <code>size_max_seq_alldifferent</code> constraint holds since the constraint <code>alldifferent</code>($\langle \text{var} - 4, \text{var} - 5, \text{var} - 2, \text{var} - 7 \rangle$) holds and since the following three constraints do not hold:</p> <ul style="list-style-type: none"> • <code>alldifferent</code>($\langle \text{var} - 2, \text{var} - 2, \text{var} - 4, \text{var} - 5, \text{var} - 2 \rangle$), • <code>alldifferent</code>($\langle \text{var} - 2, \text{var} - 4, \text{var} - 5, \text{var} - 2, \text{var} - 7 \rangle$), • <code>alldifferent</code>($\langle \text{var} - 4, \text{var} - 5, \text{var} - 2, \text{var} - 7, \text{var} - 4 \rangle$). 		
Typical	$SIZE > 2$ $SIZE < VARIABLES $ <code>range(VARIABLES.var) > 1</code>		
Symmetry	One and the same constant can be <code>added</code> to the <code>var</code> attribute of all items of VARIABLES.		
Arg. properties	Functional dependency: SIZE determined by VARIABLES.		
Counting			

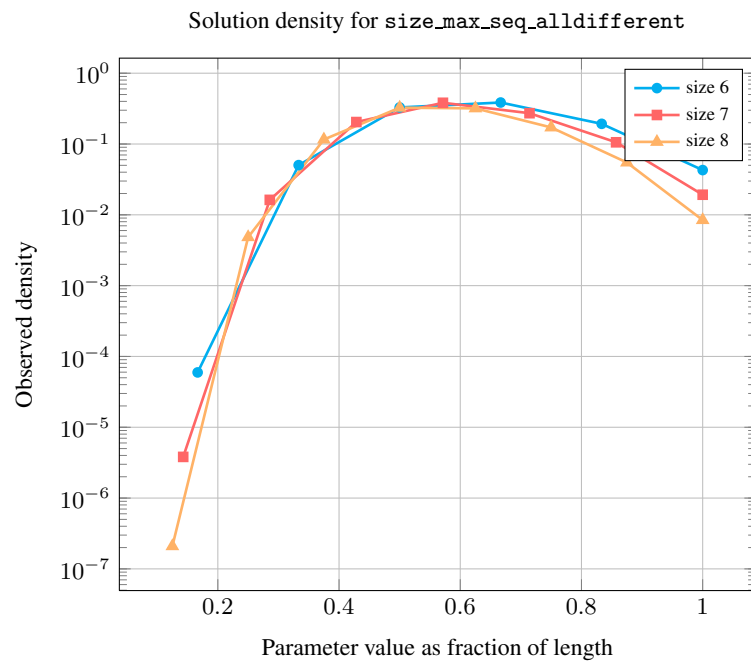
Length (n)	2	3	4	5	6	7	8
Solutions	9	64	625	7776	117649	2097152	43046721

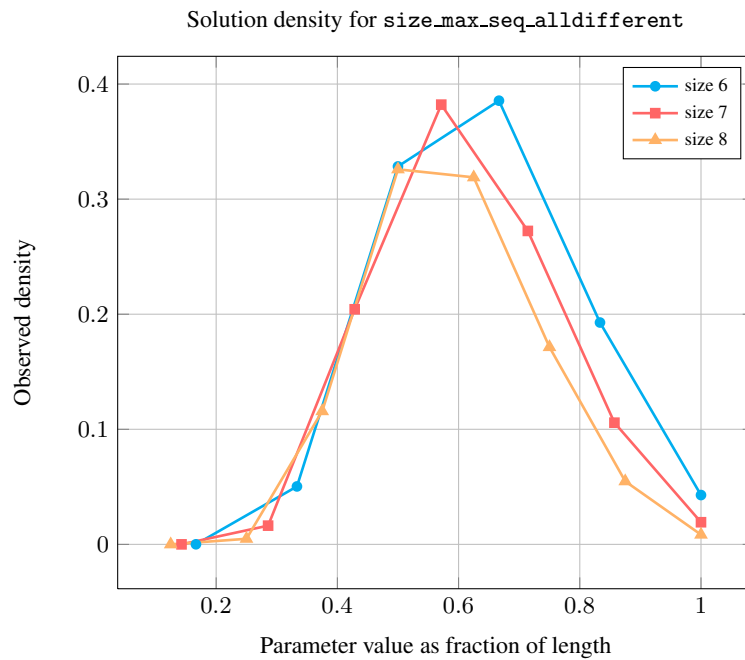
Number of solutions for size_max_seq_alldifferent: domains 0..n



Length (n)	2	3	4	5	6	7	8	
Total	9	64	625	7776	117649	2097152	43046721	
Parameter value	1	3	4	5	6	7	8	
	2	6	36	200	1050	5922	34104	208224
	3	-	24	300	3480	38640	428400	4981032
	4	-	-	120	2520	45360	801360	14028336
	5	-	-	-	720	22680	571200	13728960
	6	-	-	-	-	5040	221760	7378560
	7	-	-	-	-	-	40320	2358720
	8	-	-	-	-	-	-	362880

Solution count for size_max_seq_alldifferent: domains 0.. n



**See also**

common keyword: `alldifferent`, `open_alldifferent`, `size_max_starting_seq_alldifferent` (*all different, disequality*).

implies: `atleast_nvalue`.

Keywords

characteristic of a constraint: all different, disequality, hypergraph.

combinatorial object: sequence.

constraint arguments: pure functional dependency.

constraint type: sliding sequence constraint, conditional constraint.

modelling: functional dependency.

Arc input(s)	VARIABLES
Arc generator	<i>PATH_N</i> ↦ collection
Arc arity	*
Arc constraint(s)	alldifferent(collection)
Graph property(ies)	<u>NARC</u> = SIZE

Graph model Note that this is an example of global constraint where the arc constraints do not have the same arity. However they correspond to the same type of constraint.

20030820

2073