

# An automatic direct enumeration of $A_V(1342)$

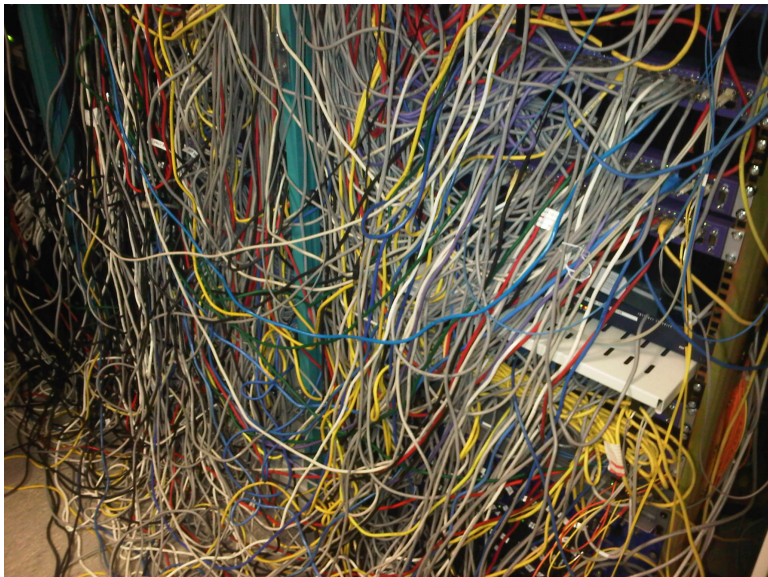
Émile Nadeau

(based on joint work with Christian Bean, Jay Pantone and Henning Ulfarsson)

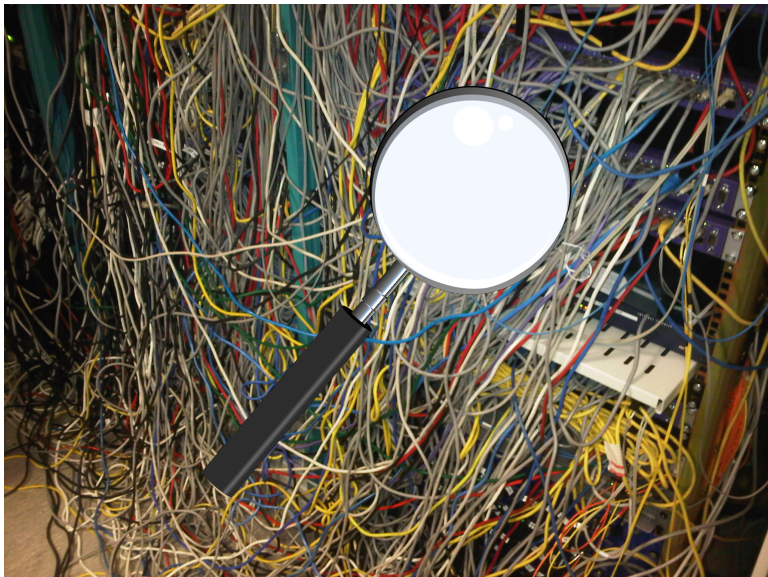
Reykjavik University

Permutations Patterns 2021

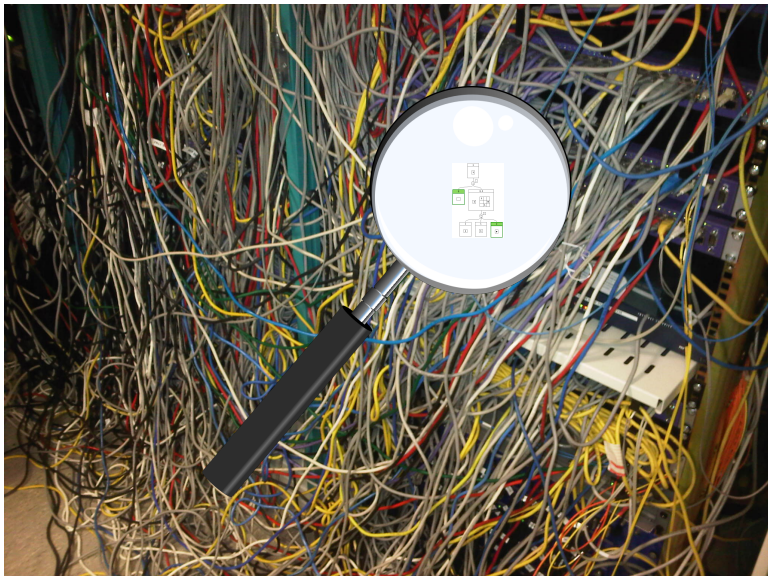
# Combinatorial Exploration



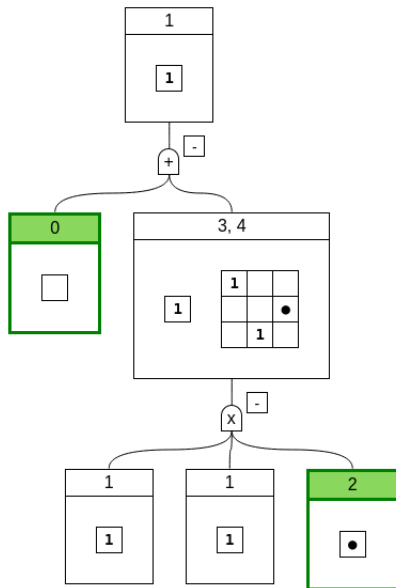
# Combinatorial Exploration



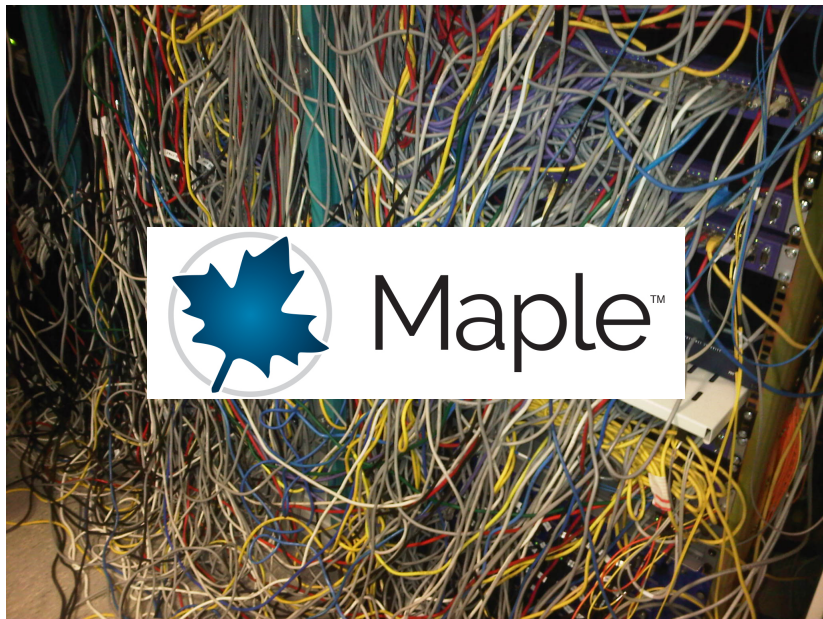
# Combinatorial Exploration



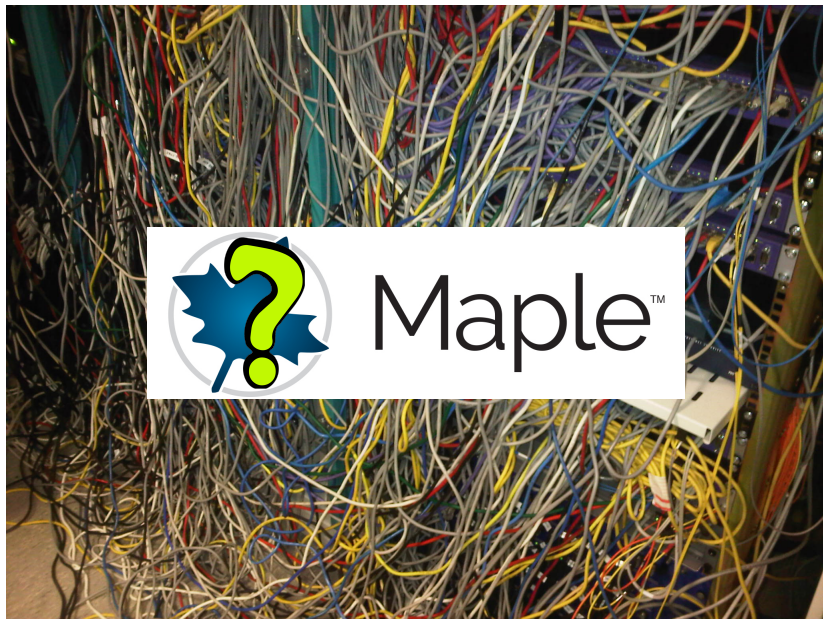
# Combinatorial Exploration

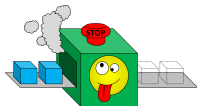
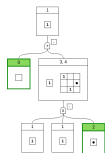
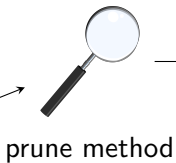
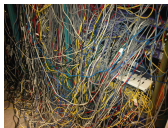


# Combinatorial Exploration



# Combinatorial Exploration







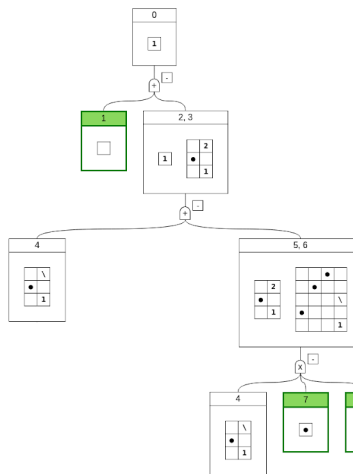
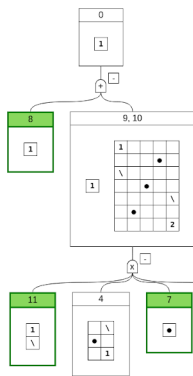
$$F_0(x) = F_1(x) + F_2(x)$$

$$F_2(x) = F_3(x)$$

$$F_3(x) = F_4(x) + F_5(x)$$

$$F_5(x) = F_6(x)$$

$$F_6(x) = F_4(x)F_7(x)^2$$



$$F_0(x) = F_8(x) + F_9(x)$$

$$F_9(x) = F_{10}(x)$$

$$F_9(x) = F_{11}(x)F_4(x)F_7(x)^2$$

$$F_0(x) = F_1(x) + F_2(x)$$

$$F_2(x) = F_3(x)$$

$$F_3(x) = F_4(x) + F_5(x)$$

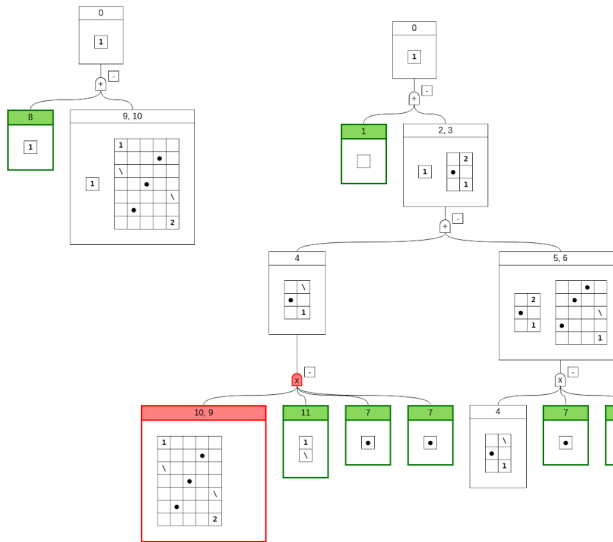
$$F_5(x) = F_6(x)$$

$$F_6(x) = F_4(x)F_7(x)^2$$

$$F_4(x) = \frac{F_9(x)}{F_{11}(x)F_7(x)^2}$$

$$F_0(x) = F_8(x) + F_9(x)$$

$$F_9(x) = F_{10}(x)$$



$$F_0(x) = F_1(x) + F_2(x)$$

$$F_2(x) = F_3(x)$$

$$F_3(x) = F_4(x) + F_5(x)$$

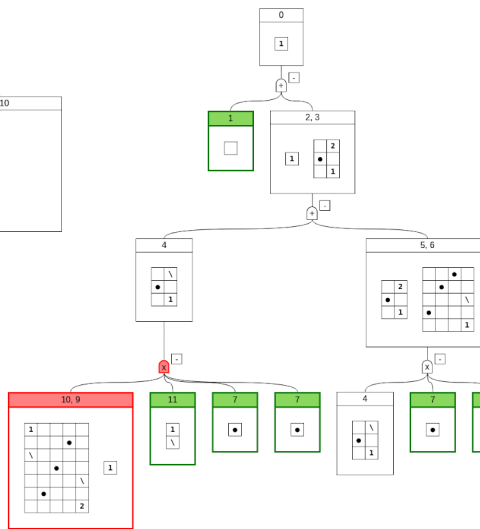
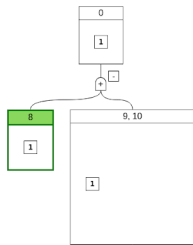
$$F_5(x) = F_6(x)$$

$$F_6(x) = F_4(x)F_7(x)^2$$

$$F_4(x) = \frac{F_9(x)}{F_{11}(x)F_7(x)^2}$$

$$F_{10}(x) = F_9(x)$$

$$F_0(x) = F_8(x) + F_9(x)$$



$$F_0(x) = F_1(x) + F_2(x)$$

$$F_2(x) = F_3(x)$$

$$F_3(x) = F_4(x) + F_5(x)$$

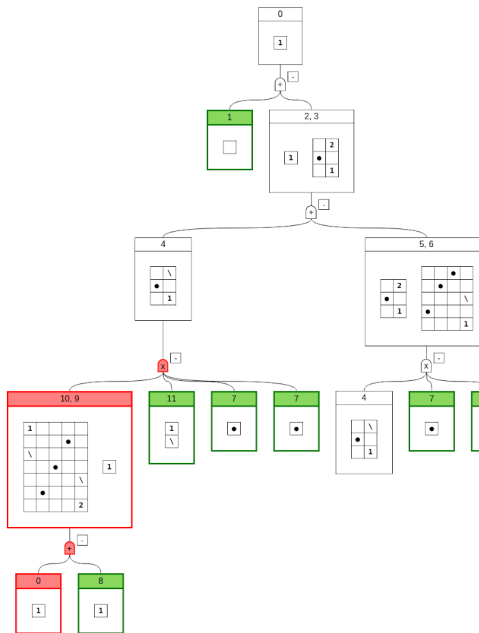
$$F_5(x) = F_6(x)$$

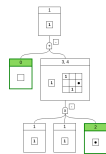
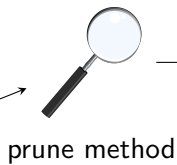
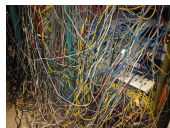
$$F_6(x) = F_4(x)F_7(x)^2$$

$$F_4(x) = \frac{F_9(x)}{F_{11}(x)F_7(x)^2}$$

$$F_{10}(x) = F_9(x)$$

$$F_9(x) = F_0(x) - F_8(x)$$

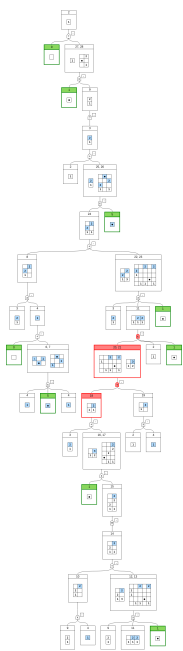




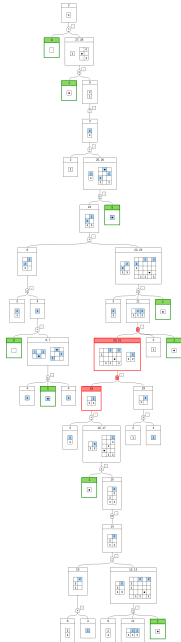
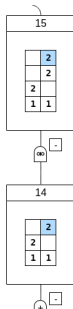
# The table method

	Prune method	Table method
Disjoint union	✓	✓
Cartesian product	✓	✓
Complement	x	✓
Quotient	x	✓
Fusion	✓	✓
Reverse fusion	x	✓

$A_v(1342)$



$$F_{15}(x, y) = \frac{yF_{14}(x, y) - F_{14}(x, 1)}{y - 1}$$



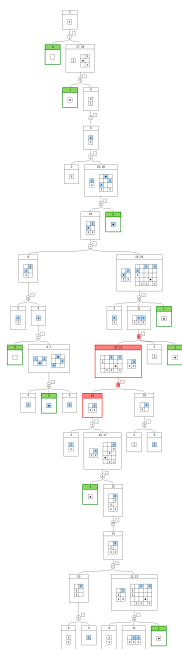
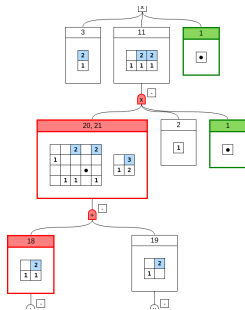
$Av(1342)$



$$F_{11}(x, y) = \frac{F_{20}(x, y)}{F_2(x)F_3(x)}$$

$$F_{20}(x, y) = F_{21}(x, y)$$

$$F_{21}(x, y) = F_{18}(x, y) - F_{19}(x, y)$$



Av(1342)