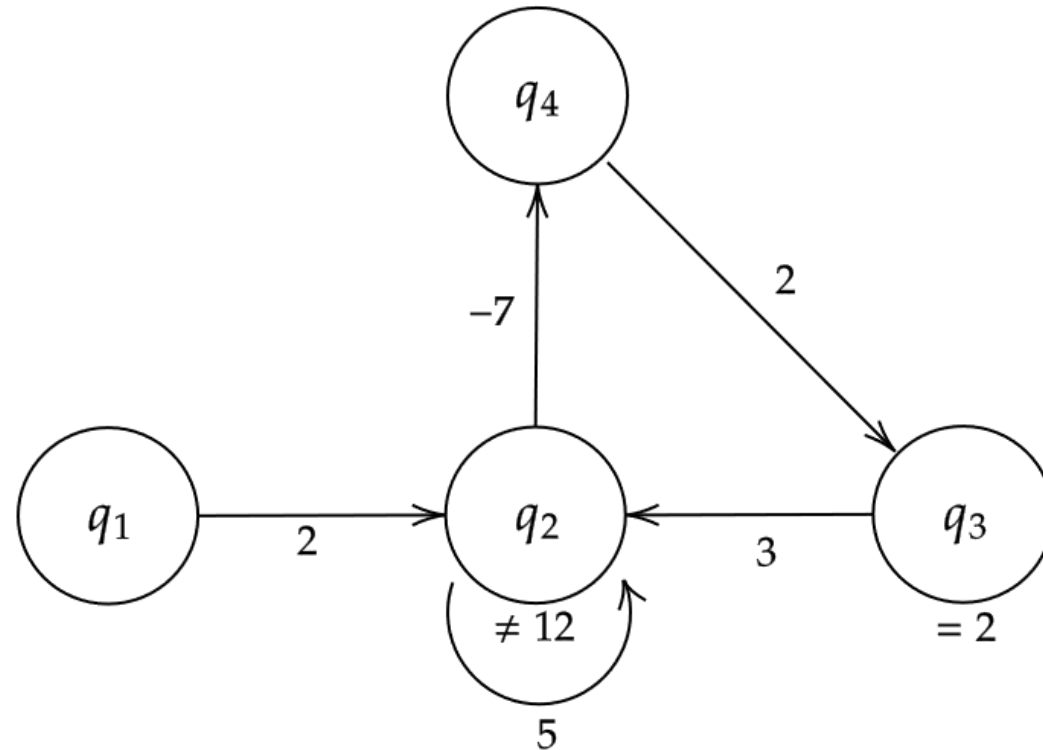


Path search with weight constraints

Reachability in 1-VASS with
tests

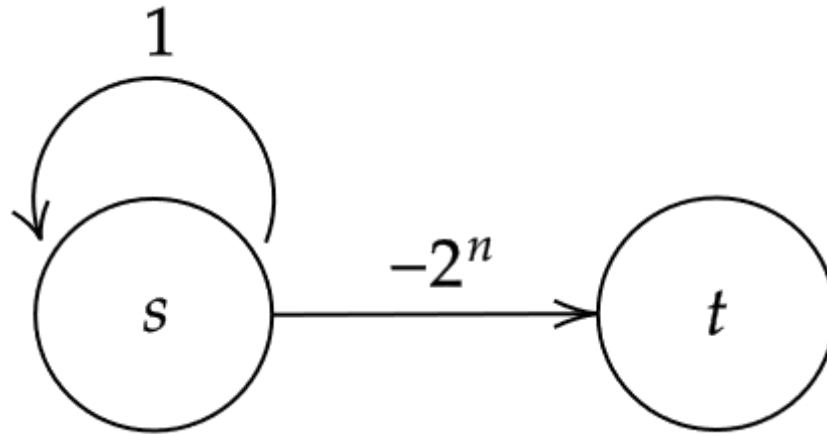
Reachability in 1-VASS with tests



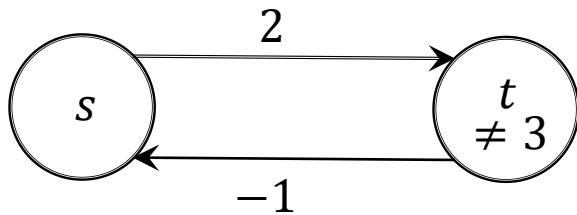
From $(q_1, 0)$ to $(q_2, 15)$:

$(q_1, 0); (q_2, 2); (q_2, 7); (q_4, 0); (q_3, 2); (q_2, 5); (q_2, 10); (q_2, 15)$

Path length can be exponential

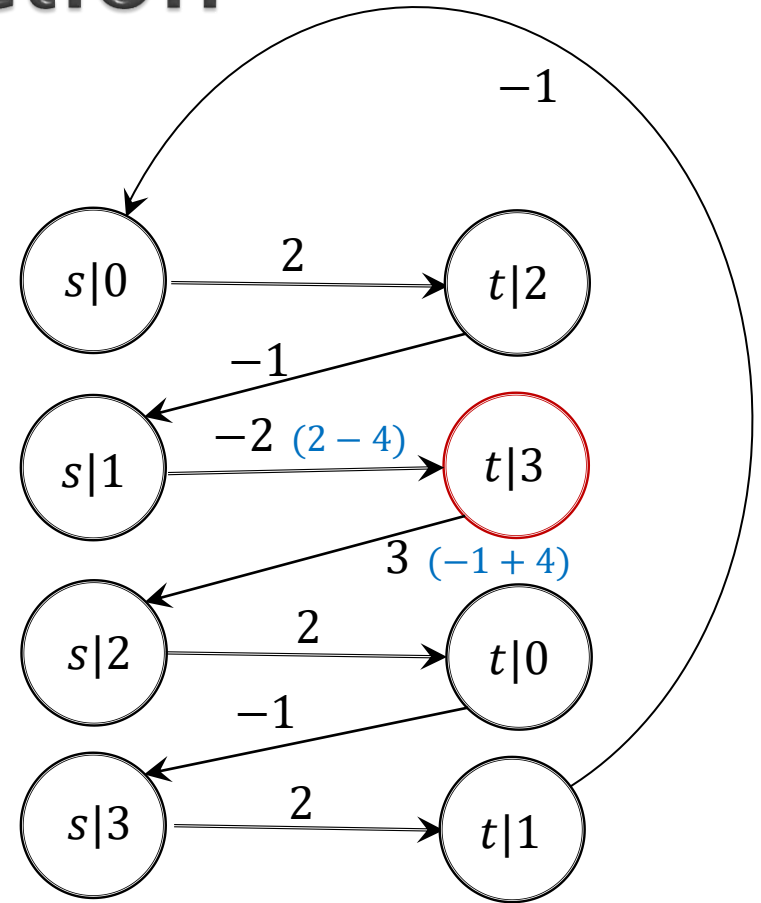


Exponential reduction



$(t, 0)$ reachable from $(s, 0)$

↔
(Jerome's idea)



$(t|0, 0)$ reachable from $(s|0, 0)$

Reachability in VASS with tests

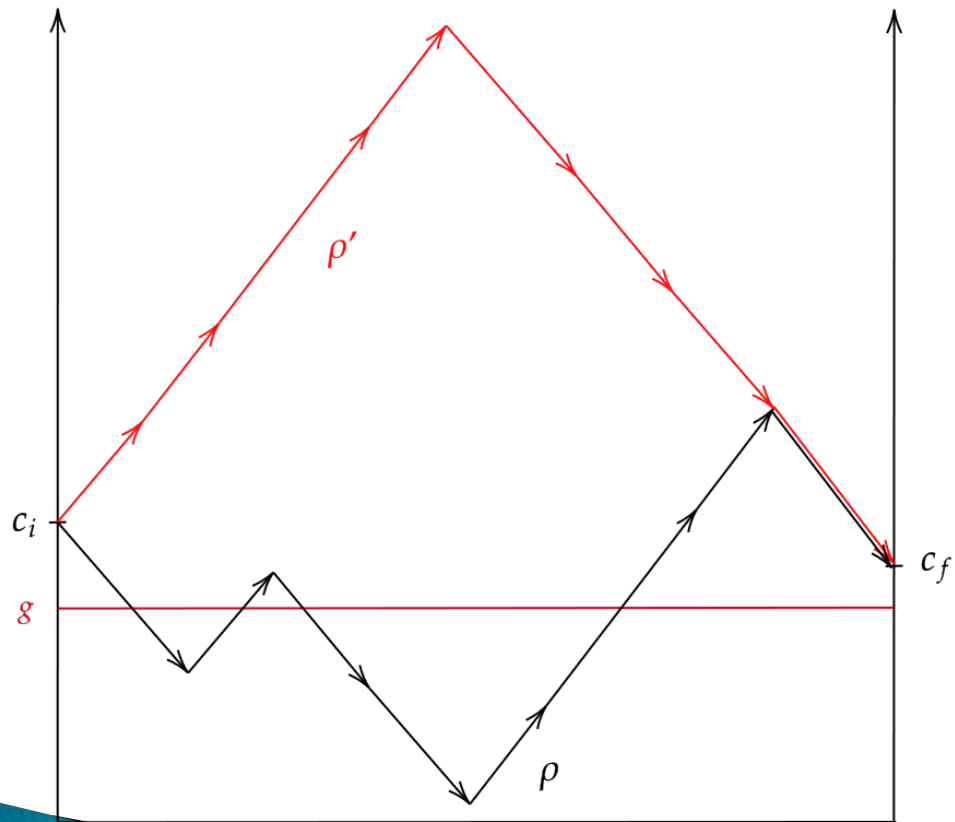
1-VASS

Without tests	With = tests	With = & \neq	with \leq & \geq	2-VASS without tests	2-VASS with = tests
NP-complete	NP-complete	?	PSPACE-complete	PSPACE-complete	undecidable

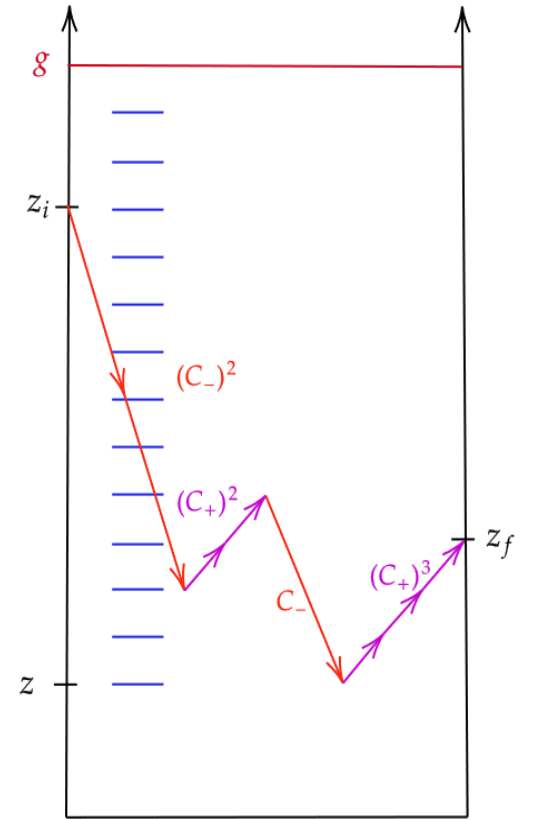
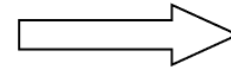
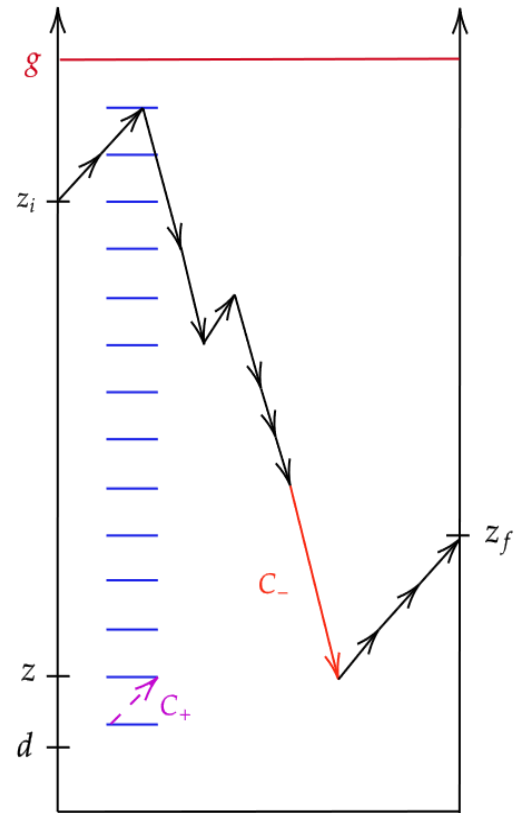
My contribution (ongoing work)

Reachability in 1-VASS with equality and disequality tests
when all disequality tests are on the same state is NP-complete

My contribution (single guard)



counter values on u



Conclusion

1-VASS

Without tests	With = tests	With = & ≠ all on same state	With = & ≠	With ≤ & ≥	2-VASS without tests	2-VASS with = tests
NP-complete	NP-complete	NP-complete	? not for long?	PSPACE-complete	PSPACE-complete	undecidable