

## Appendix B

```
(define (problem termes-cc3)
  (:domain termes)
  ; termes-cc3
  ; Initial state:
  ; 0D R1 1 3
  ; Goal state:
  ; 0 1 1 2
  ; Maximal height: 3
  (:objects
    n0 - numb
    n1 - numb
    n2 - numb
    n3 - numb
    pos-1 - position
    pos-2 - position
    pos-3 - position
    pos-4 - position
  )
  (:init
    (height pos-1 n0)
    (height pos-2 n1)
    (height pos-3 n1)
    (height pos-4 n3)
    (at pos-2)
    (IS-DEPOT pos-1)
    (SUCC n1 n0)
    (SUCC n2 n1)
    (SUCC n3 n2)
    (NEIGHBOR pos-1 pos-2)
    (NEIGHBOR pos-2 pos-1)
    (NEIGHBOR pos-2 pos-3)
    (NEIGHBOR pos-3 pos-2)
    (NEIGHBOR pos-3 pos-4)
    (NEIGHBOR pos-4 pos-3)
  )
  (:goal
    (and
      (height pos-1 n0)
      (height pos-2 n1)
      (height pos-3 n1)
      (height pos-4 n2)
    )
  )
)
```

Figure 1: `cc3.pddl` – A PDDL file of a Termes task with correlation complexity 3. The additional goal condition (`not (has-block)`) would make it more similar to the IPC9 tasks without changing anything mentioned in the paper besides the plan in Fig. 2, there the operators `move-down pos-2 n1 pos-1 n0` and `destroy-block pos-1` would be added to the end of the plan.

'terms' to 'Terms' similar to sokoban to Sokoban, PROMELA Promela

```
move-down pos-2 n1 pos-1 n0
create-block pos-1
move-up pos-1 n0 pos-2 n1
place-block pos-2 pos-3 n1 n2
move-up pos-2 n1 pos-3 n2
remove-block pos-3 pos-4 n3 n2
move-down pos-3 n2 pos-2 n1
move-down pos-2 n1 pos-1 n0
destroy-block pos-1
move-up pos-1 n0 pos-2 n1
remove-block pos-2 pos-3 n2 n1
```

840

845

Figure 2: The only cycle free solution to `cc3.pddl` without useless operators (e.g. transitions after reaching the goal state). The operators are color coded to show to which crease of the folded macro they belong. Red is the 2nd crease, green are the 1st creases and black are the 0-th creases. The operators outside the folded macro are gray.

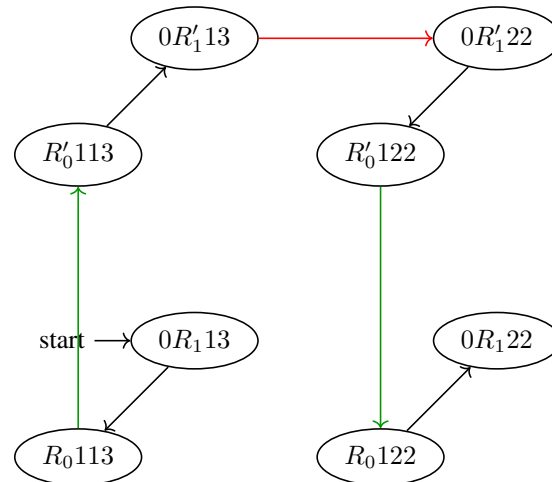


Figure 3: Visualization of the critical, 2-times folded macro for `cc3.pddl` in 3D. The color coding is the same as in Fig. 2. In each node, the numbers from left to right indicate the height of the tower on the cells 1-4. The change of height is represented by the lateral dimension. The  $R$  represents the position of the robot and the subscript height of the tower it is on. The change of the robot position is represented by the longitudinal dimension. The prime on  $R'$  indicates that the robot carries a block. The change of free hand is represented by the vertical dimension.