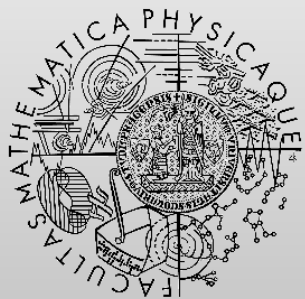


# Spin Exercises

<http://d3s.mff.cuni.cz>

*Behavior models and verification*



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# Distributed consensus

- Model algorithm for finding coordinator in distributed environment
  - Processes are subjects of being coordinator
  - One special process acts as network
    - reliable
    - unreliable (may cut off some processes)
  - fixed architecture, everything transmitted through network process
- What properties we would require?

# Exercise – Write down a model of Decker's algorithm

## INITIALIZATION:

```
shared boolean flags[ 2 ];
shared int turn;
turn = 0;
flags[ 0 ] = FREE;
flags[ 1 ] = FREE;
```

## EXIT PROTOCOL (for Process i):

```
/* pass the turn on, and release
   the resource */
turn = 1 - i;
flags[ i ] = FREE;
```

## ENTRY PROTOCOL (for Process i):

```
/* claim the resource */
flags[ i ] = BUSY;

/* wait if the other process is using the resource*/
while (flags[ 1 - i ] == BUSY) {

/* if waiting for the resource, also wait our turn */
if (turn != i) {
/* but release the resource while waiting */
flags[ i ] = FREE;
while (turn != i) { }
flags[ i ] = BUSY;
}
}
```