## Machines as Strategies

### Prisoner’s Dilemma

<table>
<thead>
<tr>
<th></th>
<th>Coop</th>
<th>Defect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C</strong></td>
<td>(1,1)</td>
<td>(0,5)</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>(5,0)</td>
<td>(3,3)</td>
</tr>
</tbody>
</table>

### Tit-For-Tat

- **Coop**
- **Defect**

J. Černý, B. Bošanský, B. An
Generalization

different actions

valid machine

invalid machine

(2,1) (1,3) (1,1) (1,0)
Main Results

RI: For every pure strategy there exists a canonical machine representing it.

RII: Minimizing size of a machine and verifying its consistency is a polynomial problem.

RIII: Computing SSE / MAXPAY-EFCE in a restriction induced by a small class of machine strategies is a polynomial problem.
Experimental Evaluation

Deviations

Speedups

J. Černý, B. Bošanský, B. An