

## PAR Attributes

**participants:**             $\left[ \begin{array}{l} \text{agent: } AGENT \\ \text{objects: } OBJECT \text{ list} \end{array} \right]$

**start:**                    *TIME*

**applicability conditions:**    *CONDITION boolean-expression*

**preparatory specification:**  $\left[ \begin{array}{l} \text{condition: } CONDITION \text{ boolean-expression} \\ \text{action: } PAR \end{array} \right]$

**subactions:**            *PAR constraint-graph*

**execution steps:**        primitive/complex

**complex:**                *subactions*

**core semantics:**         $\left( \begin{array}{l} \text{motion: } MOTION \\ \text{force: } FORCE \\ \text{path: } PATH \\ \text{purpose: } PURPOSE \\ \text{termination: } TERMINATION \\ \text{duration: } DURATION \\ \text{manner: } MANNER \end{array} \right)$

**postassertions:**        {assertions}

**parent action:**         *PAR*

**previous action:**       *PAR*

**concurrent action:**     *PAR*

**next action:**            *PAR*

*MOTION*

$\left[ \begin{array}{l} \text{object: } OBJECT \\ \text{caused: } IPAR \\ \text{translational: } BOOLEAN \\ \text{rotational: } BOOLEAN \end{array} \right]$

*FORCE*

$\left[ \begin{array}{l} \text{object: } OBJECT \\ \text{point of contact: } OBJECT \text{ LOCATION} \end{array} \right]$

*PATH*

$\left[ \begin{array}{l} \text{direction: } DIRECTION \\ \text{start: } LOCATION \\ \text{end: } LOCATION \\ \text{distance: } LENGTH \end{array} \right]$

*PURPOSE*

$\left[ \begin{array}{l} \text{achieve: } CONDITION \text{ boolean-expression} \\ \text{generate: } PAR \\ \text{enable: } PAR \end{array} \right]$

*TERMINATION:*    *CONDITION boolean-expression*

*DURATION:*        *LENGTH*

*MANNER*

$\left[ \begin{array}{l} \text{space: } REAL \\ \text{weight: } REAL \\ \text{time: } REAL \\ \text{flow: } REAL \end{array} \right]$