Multiprocessor task problems with parallel processors

- maximal polynomially solvable:
  \[ P^\text{outtree}; r_i; p_i = p \mid C_{\text{max}} \]
  \[ P^\text{tree}; p_i = p \mid C_{\text{max}} \]
  \[ P^\text{prec}; p_i = p; \text{size}_i \mid C_{\text{max}} \]
  \[ P^\text{chains}; r_i; p_i = 1 \mid L_{\text{max}} \]
  \[ P^\text{intree}; p_i = p \mid L_{\text{max}} \]
  \[ P^\text{prec}; p_i = 1 \mid L_{\text{max}} \]
  \[ P^\text{outtree}; p_i = 1 \mid \sum C_i \]
  \[ P^\text{tree}; p_i = p \mid \sum C_i \]

- maximal pseudopolynomially solvable:
  \[ P^3\mid \text{size}_i \mid C_{\text{max}} \]

- minimal NP-hard:
  \[ P^2\mid C_{\text{max}} \]
  \[ P^2\mid \text{size}_i \mid C_{\text{max}} \]
  \[ P^2\mid \text{size}_i \mid \sum C_i \]
  \[ P^2\mid r_i; p_i = 1 \mid \sum C_i \]
  \[ P^2\mid \text{prec}; p_i = 1 \mid \sum C_i \]
  \[ P^2\mid \text{chains}; \sum C_i \]
  \[ P^2\mid \text{chains}; r_i; p_i = 1 \mid \sum C_i \]
  \[ P^2\mid \text{chains}; r_i; p_i = 1 \mid \sum \text{size}_i \]
  \[ P^2\mid \text{outtree}; r_i; p_i = 1 \mid \sum C_i \]
  \[ P^2\mid \text{outtree}; r_i; p_i = 1 \mid \sum \text{size}_i \]
  \[ P^2\mid \text{outtree}; r_i; p_i = 1 \mid \sum U_i \]
  \[ P^2\mid \text{outtree}; r_i; p_i = 1 \mid \sum T_i \]
  \[ P^2\mid \text{outtree}; r_i; p_i = 1 \mid \sum U_i, \sum T_i \]

- minimal open:
  \[ P^2\mid \text{prec}; p_i = p; \text{size}_i \mid L_{\text{max}} \]
  \[ P^2\mid \text{chains}; p_i = 1; \text{size}_i \mid \sum C_i \]
  \[ P^2\mid \text{chains}; p_i = 1; \text{size}_i \mid \sum \text{size}_i \]

- maximal open:
  \[ P^m\mid \text{chains}; r_i; p_i = p; \text{size}_i \mid \sum \text{size}_i \]
  \[ P^m\mid \text{chains}; r_i; p_i = p; \sum \text{size}_i \]
  \[ P^m\mid \text{chains}; r_i; p_i = p; \sum \text{size}_i \]
  \[ P^m\mid \text{chains}; r_i; p_i = p; \sum \text{size}_i \]
  \[ P^m\mid \text{chains}; r_i; p_i = p; \sum \text{size}_i \]
References


