$$R = \begin{bmatrix} \sigma_{r_1}^2 & & \\ & \ddots & \\ & & \sigma_{r_m}^2 \end{bmatrix} \qquad H = \begin{bmatrix} \text{---} & h_1 & \text{---} \\ & \vdots & \\ \text{---} & h_m & \text{---} \end{bmatrix}$$

$$h_1^T \circ h_1^T = \begin{bmatrix} h_{11}^2 \\ \vdots \\ h_{1n}^2 \end{bmatrix} \qquad h_i^T = \begin{bmatrix} \vdots \\ \vdots \\ \vdots \end{bmatrix}_{n \times 1}$$

$$\sum_{i=1}^{m} \frac{by_i}{\sigma_i^2} \begin{bmatrix} h_{i1}^2 \\ \vdots \\ h_{in}^2 \end{bmatrix} \geq \text{diag}(J_l) - \text{diag}(J^-)$$

$$-\sum_{i=1}^{m} \frac{by_i}{\sigma_i^2} \begin{bmatrix} h_{i1}^2 \\ \vdots \\ h_{in}^2 \end{bmatrix} \leq \text{diag}(J^-) - \text{diag}(J_l)$$

$$\begin{bmatrix} \frac{1}{\sigma_1^2} h_1^T \circ h_1 & \cdots & \frac{1}{\sigma_m^2} h_m^T \circ h_m \end{bmatrix} \begin{bmatrix} by_1 \\ \vdots \\ by_m \end{bmatrix} \leq \text{diag}(J^- - J_l) \cdots$$

eqn (*)

Left Hand Side (LHS)

RHS

MATLAB function intlinprog needs optimization problem formatted in following form

$$\min_x f^T x \text{ subject to } \begin{cases} A \cdot x \leq b \\ lb \leq x \leq ub \end{cases}$$

this in our paper's variables can be written as

$$\min_b C(b) \text{ subject to } eqn(*).$$

This is the LP problem in eqn (22) of PPP_RAPS_Linear.pdf.