??

$\mathcal{A}\Phi\lambda_s\sigma\sigma S_iP$

W

$U_jS_iS_iP\mathbf{W}\alpha$

h

$kn\mathbf{q} =$

$\{q_1, q_2, \ldots, q_j, \ldots, q_k\}$

$q_j \in$

$\{1, -1\}U_j\mathbf{x} =$

$\{x_1, x_2, \ldots, x_j, \ldots, x_k\} =$

$\{p_1q_1, p_2q_2, \ldots, p_jq_j, \ldots, p_kq_k\}$

$\mathbf{p} =$

$\{p_1, p_2, \ldots, p_j, \ldots, p_k\}jp_j{}^2$

$\mathbf{W} = \{w_{ij}\}_{n\times k}$

$w_{ij}ji\mathbf{s}$

(1)
$$\mathbf{s} = \mathbf{Wx}$$

$\mathbf{xWW}n\times$

$1\mathbf{W} =$

$\{\mathbf{w}_1, \mathbf{w}_2, \cdots, \mathbf{w}_k\}^{\mathrm{T}}$

$\mathbf{G} =$

$\{g_{ij}\}_{k\times n}$

$g_{ij} \in$

$Rg_{ij} =$

$h_{ij}R_{ij}^{-\alpha}$

$h_{ij}R_{ij}S_iU_j\mathbf{y}$

(2)
$$\mathbf{y} = \mathbf{Gs}+\mathbf{z}$$

$\mathbf{G}z \in$

RN_0

W

(3)
$$\mathbf{W} = \mathbf{G}^{\mathrm{T}}(\mathbf{GG}^{\mathrm{T}})^{-1}$$

T

??????xz

(4)
$$\mathbf{y} = \mathbf{x}+\mathbf{z}$$

$j\gamma_j$**??**

(5)
$$\gamma_j = \frac{x_j{}^2}{N_0} = \frac{p_j{}^2}{N_0}$$

U_j

(6)
$$R_j = \log_2(1+\gamma_j)$$

??

(7)
$$\max\ \min\{\gamma_1, \gamma_2, \cdots, \gamma_k\}s.t.\{0 \leq (\mathbf{w}_i\mathbf{x})^2 \leq P, j = 1, 2, 3, \cdots, k, p_j \geq 0, j = 1, 2, 3, \cdots, k.$$

P

(8)
$$\max\ R = \sum_{j=1}^{n}\gamma_j s.t.\{0 \leq (\mathbf{w}_i\mathbf{x})^2 \leq P, j = 1, 2, 3, \cdots, k, p_j \geq 0, j = 1, 2, 3, \cdots, k.$$

??

$_cluster.pdf$

??

$\mathcal{DS}(x,y) =$

$\{S_1(x_1, y_1), S_2(x_2, y_2), \ldots, S_i(x_i, y_i), \ldots, S_n(x_n, y_n)\}$

$xyi, j \in$

$\{1, 2, \ldots, n\}S_iS_jR_{ij}$

$\mathcal{S}R_{ij}i, j \in$

$\{1, 2, \ldots, n\}\mathcal{G}$

$\mathcal{GV} =$

$\{v_1, v_2, \ldots, v_i, \ldots v_n\}\mathcal{S}i \in$

$\{1, 2, \ldots, n\}$

$S_i\overrightarrow{}$

$v_i\mathcal{GE}\tau i, j \in$

$\{1, 2, \ldots, n\}R_{ij} <$

$e_{ij} \in$

$\mathcal{E}$

$\mathcal{G}e_{ij}v_iv_j\mathcal{GE}\mathbf{A} =$

$\{a_{ij}\}_{n\times n}$

(9)
$$a_{ij} = \{1, e_{ij} \in \mathcal{E}, 0, e_{ij} \notin \mathcal{E}.$$