

$$\inf_{v\in K}\sup_{q\in M}L(v,q)$$

$$(1) \hspace{0.5cm} L(u,q)\leq L(u,p)\leq L(v,p)\forall q\in M,\forall v\in K,$$

$$(2) \hspace{0.5cm} \begin{array}{l} K\subsetneq \\ \bar{V},\bar{M}\subset \\ Q \\ \bar{V},Q \\ (\cdot,\cdot)_V \\ (\cdot,\cdot)_Q \\ \parallel \\ \cdot \\ V \\ \parallel \\ \cdot \\ Q \end{array}$$

$$L(v,q)=\frac{1}{2}a(v,v)-(f,v)+(q,\Phi(v))_Q,$$

$$(3) \hspace{0.5cm} \begin{array}{l} a(v,v) \\ V \\ \exists c_1>0: \forall v\in V a(v,v)c_1\|v\|_V^2. \end{array}$$

$$(4) \hspace{0.5cm} \begin{array}{l} (f,v) \\ \Phi(v): \\ V \rightarrow \\ Q \\ \Phi \\ \forall v_1,v_2\in K||\Phi(v_1)-\Phi(v_2)||_Q\leq C_\Phi||v_1-v_2||_V. \end{array}$$

$$(5) \hspace{0.5cm} \begin{array}{l} (u_n,p_n) \\ u_n\in \\ V \\ \min_{v\in K}(J_a(v)+(p_n,\Phi(v))_Q) \end{array}$$

$$(6) \hspace{0.5cm} \begin{array}{l} p_{n+1} \\ M \end{array}$$

$$(7) \hspace{0.5cm} p_{n+1}=\Pi_M(p_n+\rho_n\Phi(u_n)),$$

$$(8) \hspace{0.5cm} \begin{array}{l} \rho_n \\ \Pi_M \\ M \\ e\mathcal{L}Lipschitz,\rho_n \\ 2d_1\rho_n-C_\Phi^2\rho^2\geq\theta>0, \end{array}$$

$$(9) \hspace{0.5cm} \begin{array}{l} \|u_n-u\|_n\rightarrow \\ +\infty]0 \\ \rho_n \\ 0<\rho_n<\frac{2c_1}{C_\Phi^2}, \end{array}$$

$$(9) \hspace{0.5cm} \begin{array}{l} d \\ \min_{x\in K}\left\{\frac{1}{2}Ax\cdot x-l\cdot x\right\}, A\in M^{d\times d}, l\in R \end{array}$$

$$K:=\{x\in R^d\mid g^i\cdot x=0,\,i=1,\ldots,n,\,g^i\cdot x\leq 0,\,i=n+1,\ldots,n+m\},n+m<d,$$

$$\begin{array}{l} g^i\in \\ R^d \\ \lambda\in \\ R^{n+m} \end{array}$$

$$L(x,\lambda)=\frac{1}{2}Ax\cdot x-l\cdot x+\sum_{i=1}^{n+m}\lambda_i(g^i\cdot x),\lambda_i\geq 0,\,i>n.$$

$$\sum_{i=1}^{n+m}\lambda_i(g^i\cdot x)=\sum_{i=1}^{n+m}\lambda_i\sum_{j=1}^dg_j^ix_j=\sum_{j=1}^dx_j\sum_{i=1}^{n+m}g_j^i\lambda_i=x\cdot G^t\lambda.$$

$$\begin{array}{l} x \\ L(x,\lambda) \\ A \end{array}$$

$$Ax=l-G^t\lambda.$$

$$\begin{array}{l} \lambda_0 \\ (x^k,\lambda^k) \\ \rho_n \\ \rho_n \\ x^{k+1} \end{array}$$