$\frac{1}{2}d, W_k d$
W_k
$\frac{1}{2t_k}\|d\|^2$
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$\frac{1}{2}\|d\|^2$
W_k
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$\min_{\hat{x}^k+d\in^n} M_k(\hat{x}^k+$
$d)+$
$\mathtt{i}_X(\hat{x}^k+$
$d)+$
$\frac{1}{2}d, W_k d.$
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W_k
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W_k
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$$\Phi(x,\hat{x}) = \phi(x,\hat{x}) + \frac{1}{2}\langle x-\hat{x}, Q(\hat{x})(x-\hat{x})\rangle \quad (1)$$

$\phi(\cdot,\hat{x})$
$\frac{1}{2}\langle\cdot-$
$\hat{x}, Q(\hat{x})(\cdot-$
$\hat{x})\rangle$
$\min_{\hat{x}^k+d} m(\hat{x}^k+$
$d)+$
$\frac{1}{2}d, Q(\hat{x}^k)d+$
$\frac{1}{2t_k}\|d\|^2$
m_k
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$Q(\hat{x})$
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$\hat{x}^k) :=$
$Q_k =$
$Q_k^\top and-$
$qI \prec$
$Q_k \prec$
$qI for q >$
0
$A \prec$
B
$A, B \in^{n\times n}$
$(B-$
$A)$
Q_k
k

$$\min_{\hat{x}^k+d\in X} M_k(\hat{x}^k+d) + \frac{1}{2}d, \left(Q_k + \frac{1}{t_k}I\right) d. \quad (2)$$

$W_k =$
Q_k+
$\frac{1}{t_k}I$
Q_k
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∂_k
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$\in$
$\partial M_k(x^{k+1})+$