$y_1 \neq y_2$: $L = \max(0, \alpha_2^{old} - \alpha_1^{old})$ $H = \min(C, C + \alpha_2^{old} - \alpha_1^{old})$

$y_1 = y_2$: $L = \max(0, \alpha_2^{old} + \alpha_1^{old} - C)$ $H = \min(C, \alpha_2^{old} + \alpha_1^{old})$

$$\alpha_2^{new,unc} = \alpha_2^{old} + \frac{y_2(E_1 - E_2)}{\eta}$$

其中 $E_i = \left(\sum_{j=1}^{N} \alpha_j y_j k(x_j\ x_i) + b \right) - y_i \quad i=1,2$

$$\eta = k_{11} + k_{22} - 2k_{12}$$

$$\alpha_2^{new} = \begin{cases} H & \alpha_2^{new,unc} > H \\ \alpha_2^{new,unc} & L \leq \alpha_2^{new,unc} \leq H \\ L & \alpha_2^{new,unc} < L \end{cases}$$

$$\alpha_1^{new} = \alpha_1^{old} + y_1 y_2 (\alpha_2^{old} - \alpha_2^{new})$$

$$b_1^{new} = -E_1 - y_1 k_{11} (\alpha_1^{new} - \alpha_1^{old}) - y_2 k_{21} (\alpha_2^{new} - \alpha_2^{old}) + b^{old}$$

$$b_2^{new} = -E_2 - y_1 k_{12} (\alpha_1^{new} - \alpha_1^{old}) - y_2 k_{22} (\alpha_2^{new} - \alpha_2^{old}) + b^{old}$$

if α_1^{new} 在 $(0,C)$ 之间. $b = b_1^{new}$

if α_2^{new} 在 $(0,C)$ 之间 $b = b_2^{new}$

if α_1^{new} 和 α_2^{new} 都不在 $(0,C)$ 之间 $b = (b_1^{new} + b_2^{new})/2$