

$$x^P(k+1) = \arg \max_{\{x^P(k), x(k)\}} f(x)$$

$$v(k+1) = \chi[v(k) + \phi^P(x^P(k) - x(k)) + \phi^G(x^G(k) - x(k))]$$

$$x(k+1) = x(k) + v(k+1)$$

$$x^G(k+1) = \arg \max_{\{x^G(k), x(k)\}} f(x)$$

