fitness

$x = (x_1, x_2)$

$f_1(x)$ $f_2(x)$

$\frac{dx_1}{dt} = x_1 (f_1(x) - \phi)$ $\frac{dx_2}{dt} = x_2 (f_2(x) - \phi)$

$x_1 + x_2 = 1$

$\frac{dx_1}{dt} + \frac{dx_2}{dt} = x_1 (f_1(x) - \phi) + x_2 (f_2(x) - \phi) = 0$

$\phi = x_1 f_1(x) + x_2 f_2(x)$

$x_2 = 1 - x_1$

$\frac{dx_1}{dt} = x_1 (f_1(x) - x_1 f_1(x) - x_2 f_2(x))$

$= x_1 (1 - x_1)(f_1(x) - f_2(x))$

$x_1 = 0$ $x_1 = 1$ $f_1(x) = f_2(x)$

$\downarrow \in GT$

$A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$

$f_1(x) = a x_1 + b x_2$

$f_2(x) = c x_1 + d x_2$

$\Leftrightarrow$

$f = Ax$

$\phi = fx$

$\frac{dx}{dt} = x (f - \phi)$