



Known results (2)

[Haderer-Rothe (1975)] (continued)

- Construction of f for which linear determinacy fails:
 $f(u) = u(1-u)(1+ku)$
(In this case, $c_0 = 2\sqrt{f'(0)} = 2$)

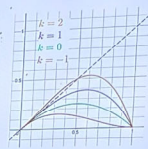
$$c_* = \begin{cases} 2 & (-1 \leq k \leq 2) \\ \sqrt{\frac{k}{2}} + \sqrt{\frac{2}{k}} & (k > 2) \end{cases}$$

That is, linear determinacy fails when $k > 2$.

Remark When $1 < k \leq 2$, (KPP) is not satisfied, but linear determinacy holds.

Question

- Can the condition (KPP) for linear selection to hold be weakened?
- Like $f(u) = u(1-u)(1+2u)$, what is the nonlinear term that forms a threshold between success/failure of linear selection?



The graph shows the function $f(u) = u(1-u)(1+ku)$ for $u \in [0, 1]$ and $k \in \{-1, 0, 1, 2\}$. The curves are shown in different colors: blue for $k=2$, green for $k=1$, red for $k=0$, and purple for $k=-1$. The $k=2$ curve is the highest, followed by $k=1$, $k=0$, and $k=-1$ is the lowest. The curves are symmetric about $u=0.5$.