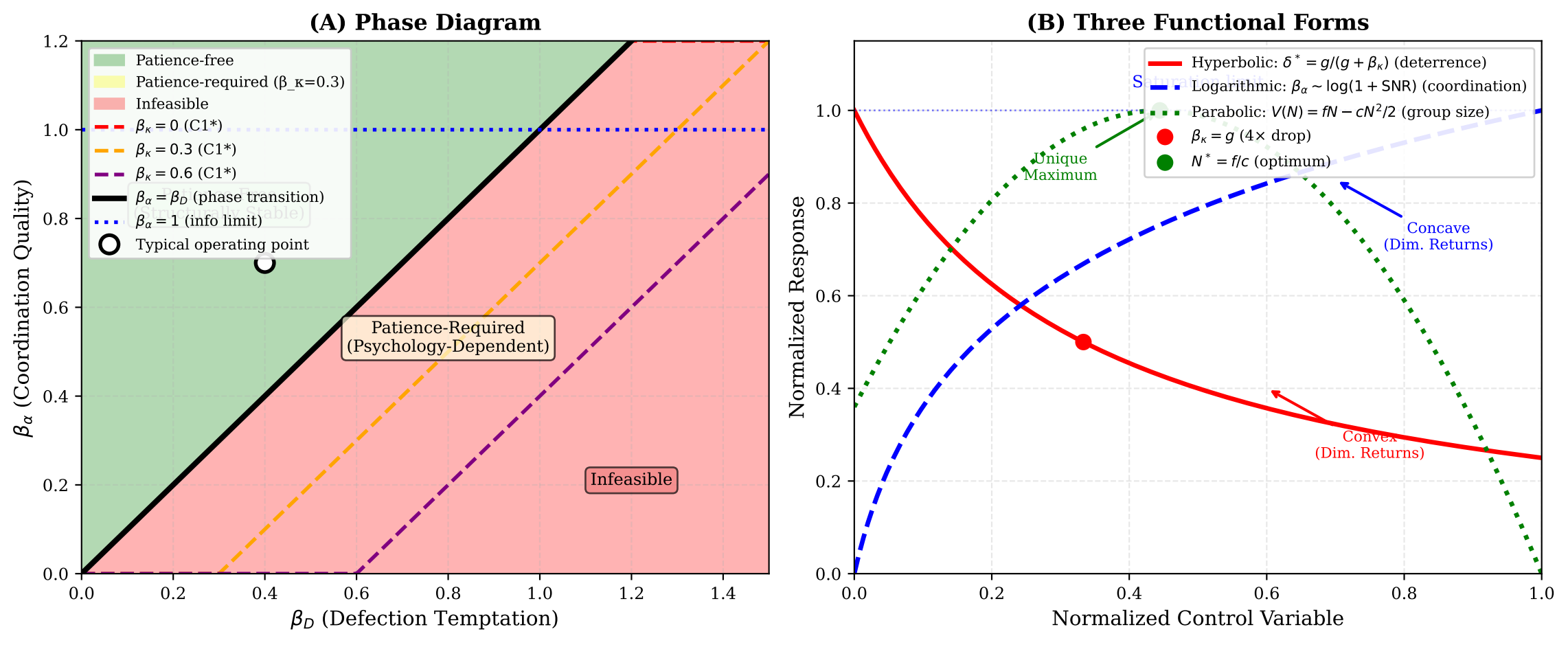
(A) Phase Diagram
Patience-free
Patience-required (β_κ=0.3)
Infeasible
$\beta_\kappa = 0$ (C1*)
$\beta_\kappa = 0.3$ (C1*)
$\beta_\kappa = 0.6$ (C1*)
$\beta_\alpha = \beta_D$ (phase transition)
$\beta_\alpha = 1$ (info limit)
Typical operating point
Patience-Required
(Psychology-Dependent)
Infeasible
β_α (Coordination Quality)
β_D (Defection Temptation)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
(B) Three Functional Forms
Hyperbolic: $\delta^* = g/(g+\beta_\kappa)$ (deterrence)
Logarithmic: $\beta_\alpha \sim \log(1+\mathrm{SNR})$ (coordination)
Parabolic: $V(N) = fN - cN^2/2$ (group size)
$\beta_\kappa = g$ (4× drop)
$N^* = f/c$ (optimum)
Unique
Maximum
Concave
(Dim. Returns)
Convex
(Dim. Returns)
Normalized Response
Normalized Control Variable