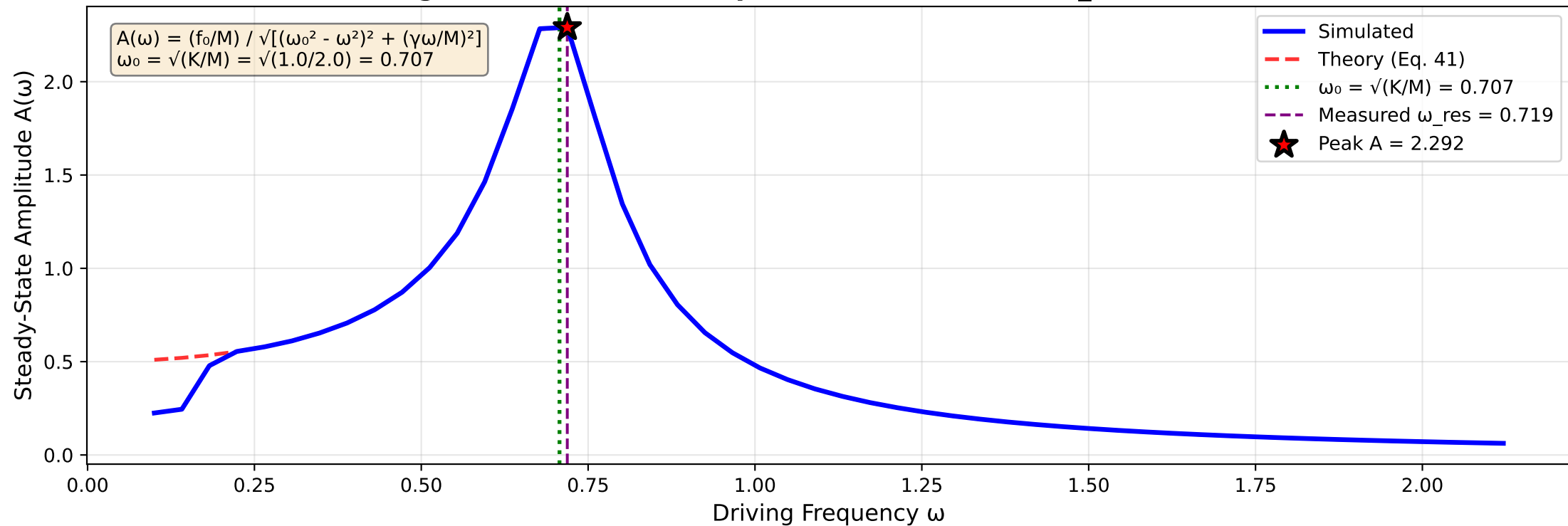
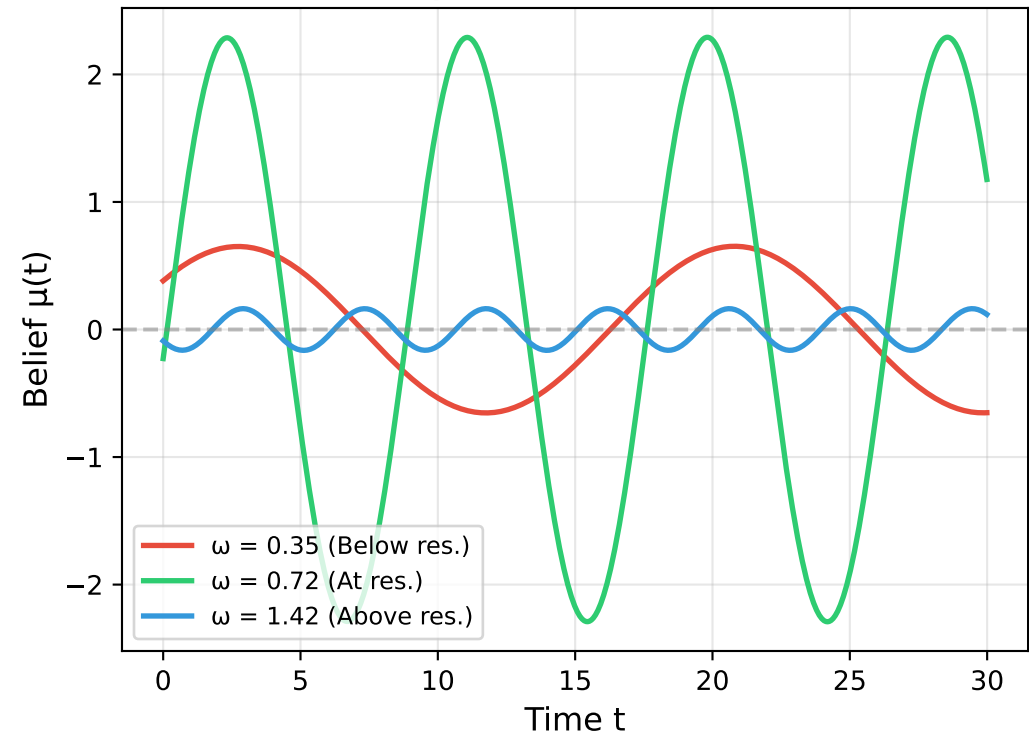


Resonance in Belief Dynamics: Optimal Persuasion Frequency

Cognitive Resonance: Optimal Persuasion at $\omega_{\text{res}} = \sqrt{(K/M)}$



Steady-State Oscillations



COGNITIVE RESONANCE (Eq. 40-42)

Resonance Frequency:

$$\omega_{\text{res}} = \sqrt{(K/M)} = \sqrt{(\text{Evidence} \times \text{Precision} / \text{Mass})}$$

Amplitude at Resonance (Eq. 42):

$$A_{\text{max}} = (f_0/\gamma)\sqrt{(M/K)}$$

PARAMETERS:

- Mass (precision) $M = 2.0$
- Stiffness $K = 1.0$
- Damping $\gamma = 0.3$
- Forcing $f_0 = 0.5$

RESULTS:

- Natural freq $\omega_0 = 0.7071$
- Measured $\omega_{\text{res}} = 0.7188$
- Measured $A_{\text{max}} = 2.2915$
- Theory $A_{\text{max}} = 2.3570$

IMPLICATION:

"High-mass (confident) agents have LARGER resonance amplitudes!"

Properly timed evidence produces dramatic belief swings."

Applications: education, therapy, advertising, negotiation