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Transient Oscillations that Are Robust in a Model for Immune Responses to Viral Infections

Oscillations are abundant in immune response dynamics. These oscillations are typically short-lived (transient) and reproducible upon repeated antigenic challenges (robust). Using a simple differential equations model for T cell responses to viral infections, I show how transient oscillations can be created as orbits near a normally hyperbolic periodic orbit. The normal hyperbolicity of the periodic orbit ensures the robustness of the observed transient oscillations.