Traveling Waves for a Class of Diffusive Disease-Transmission Models with Network Structures

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In this paper, the necessary and sufficient conditions for the existence of traveling wave solutions are derived for a class of diffusive disease-transmission models with network structures. The existence of traveling semifronts is obtained by Schauder's fixed-point theorem, and these traveling semifronts are shown to be bounded by transforming the boundedness problem into the classification problem of nonnegative solutions to a linear elliptic system on $\mathbb{R}$. To overcome the reducibility problem arising in the proofs, Harnack's inequality for positive supersolutions on $\mathbb{R}$ is proved.

References

[1] K.-Y. Lam, X. Wang and T. Zhang. *Traveling waves for a class of diffusive disease-transmission models with network structures*. SIAM Journal on Mathematical Analysis, 50(6) (2018), 5719-5748.

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