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Nontrivial periodic solution for a stochastic brucellosis model with application to Xinjiang, China

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***Highlights (for review)**

1. A stochastic periodic brucellosis model is proposed by introducing the effect of environmental white noise.

2. Existence of nontrivial stochastic periodic solution is shown by constructing a novel combination of Lyapunov functions.

3. As an application, this model is used to simulate the newly acute human brucellosis data for each season from 2010 to 2014 in Xinjiang.