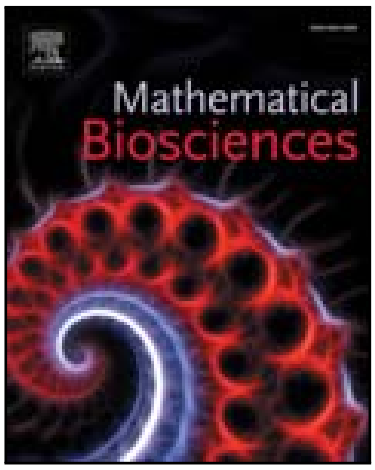

Mathematical analysis of a power-law form time dependent vector-borne disease transmission model

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Highlights

- Using theory of a stochastic process, a general time dependent single strain vector borne disease model is derived.
- Under certain choice of time dependent transmission kernel the proposed model can be converted to a classical integer order system.
- For a power-law form time dependent kernel the proposed model is converted to a fractional order system.
- Mathematical properties of the proposed model are explored.
- Model is fitted to the weekly dengue incidence data of San Juan, Puerto Rico.
- Several important parameters of the newly proposed model are estimated from data.