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A Mathematical Model for Transmission Dynamics of HIV/AIDS with effect of weak  $CD4^+$  T cells

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## Highlights

- A model is defined for HIV/AIDS with incorporated of weak  $CD4^+$  T-cells.
- The stability analysis is carried out for infection-free and infection equilibrium.
- Local stability is demonstrated by Routh-Hurwitz criterion.
- Global stability is verified by Lyapunov's and the geometric approach method.

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