

Kinetic modelling and analysis of autoimmune diseases

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We consider a mathematical model for autoimmune disease based on a kinetic theory approach. The model describes not only the cellular dynamics and the biological expression of cells but also the global behaviour of the interacting populations that are involved in the disease. We investigate relevant properties of the model solution and study interesting problems related to the chronicity and impact of drug therapies on the development of the disease.

We perform some numerical simulations which show the ability of the model to reproduce different aspects of the disease and to investigate optimal treatment strategies.