
STUDY OF A SEMILINEAR EVOLUTION EQUATION OF A PRION
PROLIFERATION MODEL IN THE PRESENCE OF CHAPERONE IN A
BANACH SPACE

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A mathematical model for the dynamics of prion proliferation in the presence of chaperone involving a coupled system consisting of an ordinary differential equation and a partial integro-differential equation is analyzed. For bounded reaction rates, we prove the existence and uniqueness of positive classical solution with the help of the theory of evolution system. In the case of unbounded reaction rates, the model is set up into a semilinear evolution equation form in the product Banach space $\mathbb{R} \times L_1((z_0, \infty); (q + z)dz)$ and the existence of a unique positive local mild solution is established by using C_0 -semigroups theory of operators.

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