

KS4 - Jorge Velasco-Hernandez (Petroleum Mexican Institute - Mexico)

Phenotypic Switching and Mutation in the Presence of a Biocide: No Replication of Phenotypic Variant

Abstract:

A model for three competing bacterial strains that incorporates mutation and/or phenotypic switching is studied. We consider three different strains: wild, mutated and phenotypic bacteria generated by an inhibitor introduced in the environment. Our model considers that all new phenotypic bacteria are sensitive to the inhibitor and there is no phenotypic replication, that is, does not exist a fraction of the phenotypic variant that remains in this stage during its time life. In a first study, two steady state regimes are identified and the kind of stability of these, finding that the strain surviving is the mutation of the wild strain. In a second study, we obtain three steady state regimes and we find the persistence of the three bacteria in the system.