

Abstract Submitted
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New results in bioconvective linear stability of gravitactic microorganisms ILDEBRANDO PEREZ-REYES, LUIS ANTONIO DAVALOS-OROZCO, Instituto de Investigaciones en Materiales, Departamento de Polimeros, Universidad Nacional Autonoma de Mexico — New results on the linear bioconvective instability of a suspension of gravitactic microorganisms have been calculated. Use is made of the model equations presented by Ghorai (2000,2007) some years ago but that have not been used to determine the linear instability in an infinite horizontal fluid layer. The hydrodynamic stability is characterized by dimensionless parameters such as the bioconvection Rayleigh number Ra , the gyrotaxis number G , the motility of microorganisms d and the wavenumber k of the perturbation. Analytical and numerical solutions are calculated. Two numerical methods are used for the sake of comparison. They are a shooting method and a Galerkin method. Marginal curves of Ra against k for fixed values of d and G are presented along with curves corresponding to the variation of the critical values of Ra_c and k_c . The important result of this work is that those critical values are compared with the experimental data presented in Table I of Bees and Hill (1997) and Table II of Bees and Hill (1998), where the gyrotactic algae *Chlamydomonas nivalis* is used, and it is found that the agreement is very good. A discussion of the results will be given.

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