1027-92-238 **Joceline C. Lega***, Department of Mathematics, 617 N. Santa Rita, Tucson, AZ 85721. *A model for the dynamics and growth of bacterial colonies.*

I will summarize the work of references [1-3], in which we introduced a model for the dynamics and growth of bacterial colonies on soft agar plates. This model [1] consists of reaction-diffusion equations coupled to a hydrodynamic equation describing the velocity field of a complex fluid consisting of bacteria and water.

Numerical simulations [2] show that the model is able to qualitatively reproduce phase diagrams, which classify colony morphology as a function of the initial amount of nutrients on the plate and of the wetness of the agar. Simulations also indicate that complex collective motions within a colony may either stabilize or destabilize its boundary.

This is joint work with Thierry Passot, Obsvatoire de la Côte d'Azur, Nice, France.

References:

1. J. Lega, T. Passot, "Hydrodynamics of bacterial colonies: a model", Phys. Rev. E, v. 67, 031906, 2003.

2. J. Lega, T. Passot, "Hydrodynamics of bacterial colonies: phase diagrams", Chaos, v. 14, p. 562-570, 2004.

3. J. Lega, T. Passot, "Hydrodynamics of bacterial colonies", Nonlinearity 20, C1-C16 (2007). (Received February 27, 2007)