1023-37-686 **Rachelle C. DeCoste*** (ar4669@usma.edu). *Lie Symmetries for a Model of Growth-death Kinetics.*

We calculate Lie symmetries for a set of nonlinear differential equations that model the growth-death kinetics of *Staphylococcus aureus* found in foods. This is of interest to the food scientists at the US Army Natick Soldier Research Center. The goal of our study is to contribute to the results on the behavior of the system derived from numerical analysis. Our focus is on the Lie symmetries of the system and in particular on the symmetries inherited by a center manifold. Lie symmetries can be a useful tool in the study of the behavior of a system that is not easily solved. This talk will focus on the specific results of the symmetry analysis and will consider the question of how to calculate the actual Lie symmetries and their effect on trajectories on the center manifold once the infinitesimal generators have been found. (Received September 21, 2006)