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**Timothy C Reluga\*** ([timothy@reluga.org](mailto:timothy@reluga.org)), Department of Mathematics, McAllister Hall, University Park, PA 16901-6401. *Rational behavior in response to pandemic influenza, and consequences for control*. Preliminary report.

The prospect of pandemic influenza is an ongoing concern in national disaster preparation, and one which has inspired several notable modelling efforts. One crucial feature needed in these models is some prediction of how peoples behaviors will change in response to an ongoing pandemic. In this talk, I'll describe new research into the application of optimal control theory in combination with recent advances in public health game theory for the calculation of rational-expectation equilibria in dynamics games for pandemics. Numerical methods used to solve this problem combine non-standard finite difference methods with nonlinear multigrid methods. I'll then demonstrate how the use of this and related approaches will help predict policy resistance and may lead to better control. (Received September 16, 2008)