962-34-346 **Lih-Ing Wu*** (Lynn_Wu@berea.edu), CPO 2055, Berea College, Berea, KY 40404, and **Zhilan Feng** (zfeng@math.purdue.edu), Department of Mathematics, Purdue University, West Lafayette, IN 47906. *Homoclinic Bifurcation in an SIQR Model for Childhood Diseases.*

We consider a system of ODEs which describes the transmission dynamics of childhood diseases. A center manifold reduction at a bifurcation point has the normal form $x' = y$, $y' = axy + bx^2y + O(4)$, indicating a bifurcation of codimension greater than two. A three-parameter unfolding of the normal form is studied to capture possible complex dynamics of the original system which subjects to certain constrains on the state space due to biological considerations. It is shown that the perturbed system produces homoclinic bifurcation. (Received September 12, 2000)