

1067-35-1962 **Ronald Mickens*** (rohrrs@math.gatech.edu), Clark Atlanta University, Physics Department,
Atlanta, GA 30314. *An Exactly Solvable SIR Model Having Population Dynamics.*

We construct a SIR epidemiological model where the various population transition terms have fractional powers. The model also contains logistic-like population dynamics and thus corresponds to disease spread where the disease time scale is comparable to the average lifespan of the general population. An important feature of this model is that for given relevant initial conditions the exact solution can be calculated. An examination of the S-I phase-space allows the determination of all the critical parameters for this model of the spread of disease. A discussion of the methodology for SIR model construction will be presented as well as how the current work can be generalized. (Received September 22, 2010)