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**Nadarajah Kirupaharan\*** ([nkirupaharan@bmcc.cuny.edu](mailto:nkirupaharan@bmcc.cuny.edu)), 199 Chambers Street, Room N-520, New York, NY 10007, and **Channa Navaratna** ([channa@iup.edu](mailto:channa@iup.edu)), 210 South 10th Street, Indiana, PA 15705. *Compartmental SIS/SIR models with Multiple Strains.*

Compartmental models of types Susceptible-Infected- Susceptible (SIR) and Susceptible -Infected- Recovered (SIR) will be analyzed for the dynamics of disease spread among multiple colonies. The dynamics of multiple strains have been treated for single patch and two patches are investigated. Numerical simulations have been carried out to study the effects of recurrence of a disease between two patches. Analytical results have been compared with the numerical results that complement the characteristics of the existence of multiple strains. (Received March 30, 2010)