1086-VG-1491 **Najat Ziyadi*** (`najat.ziyadi@morgan.edu`), Mathematics Department, Morgan State University, 1700 East Cold Spring Lane, Baltimore, MD 21251, and **Said Boulite**, **M. Lhassan Hbid** and **Suzanne Touzeau**. *Mathematical analysis of a scrapie disease transmission model.*

Scrapie is a transmissible spongiform encephalopathy that affects sheep. We analyse a mathematical model which describes the spread of scrapie in a sheep flock that takes into account various factors and processes, including seasonal breeding, horizontal and vertical transmission, genetic susceptibility of sheep to the disease, and a long and variable incubation period. The model, derived from a classical SI (susceptible-infected) model, also incorporates a discrete genetic structure for the flock, as well as a continuous infection load structure which represents the disease incubation. The resulting model consists of a set of partial differential equations which describe the evolution of the flock with respect to time and infection load. (Received September 22, 2012)