1067-41-816   **Charles Knessl*** (`knessl@uic.edu`), Department of Math., Stat. and Comp. Sci., 851 South Morgan St., Chicago, IL 60607-7045, and **Sohn Eunju** (`esohn@math.uga.edu`), Boyd Graduate Research Center, Athens, GA 30606. *Asymptotic Analysis of Dynamic Storage Allocation Models.*

We consider dynamic storage allocation models, which have m primary holding spaces and infinitely many secondary ones. All of the spaces are numbered and ordered. An arriving customer takes the lowest available space. We define the traffic intensity ρ to be λ/μ where λ is the customers' arrival rate and μ is the service rate. We study the joint probability distribution of the numbers of occupied primary and secondary spaces. In the infinite server (IS) model, each stored item is serviced at a rate μ, while in the processor sharing (PS) model each stored item is served at rate μ/N, where N is the total number of stored items present. We analyze these models asymptotically, for $\rho \to 1$ for the PS model, and for $\rho \to \infty$ for the IS model. We also discuss some simpler models that bound the PS model from above or from below. The models correspond to solving certain difference equations, and our analysis involves asymptotic expansions, singular perturbations and special functions. (Received September 15, 2010)

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