1145-60-2278   **David Lipshutz*** (`lipshutz@technion.ac.il`), Faculty of Electrical Engineering, Technion — Israel Institute of Technology, 32000 Haifa, Israel, and **Rami Atar**. *Load balancing for queues using delayed information.*

We consider a load balancing problem for a network of parallel queues in which incoming jobs (or customers) are routed to one of the queues upon arrival. In our model, the routing decision depends only on past routing decisions and the delayed state of the queues. When a job arrives to the queue, the current state of the queues is estimated based on this information and the incoming job is routed to the queue with the shortest estimated length. We formulate a setting where the delay remains constant under heavy traffic scaling, so the effects of the delay do not disappear. We prove state space collapse of the estimated queue lengths under heavy traffic scaling. This allows us to formulate a diffusion model and prove convergence to it under several natural estimation schemes. (Received September 25, 2018)