A sample path relation for the sojourn times in $G/G/1-PS$ systems and its applications

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For the single server system under processor sharing (PS) a sample path result for the sojourn times in a busy period is proved, which yields a sample path relation between the sojourn times under PS and FCFS discipline. This relation provides a corresponding one between the mean stationary sojourn times in $G/G/1$ under PS and FCFS. In particular, the mean stationary sojourn time in $G/D/1$ under PS is given in terms of the mean stationary sojourn time under FCFS, generalizing known results for $GI/M/1$ and $M/GI/1$. Extensions of these results suggest an approximation of the mean stationary sojourn time in $G/GI/1$ under PS in terms of the mean stationary sojourn time under FCFS.

[1] A. Brandt, M. Brandt: *A sample path relation for the sojourn times in $G/G/1-PS$ systems and its applications*, ZIB-Report 03-18, http://www.zib.de/PaperWeb/abstracts/ZR-03-18/

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