IMM - DTU

02405 Probability 2003-11-11 The argument of example 2 page 375 $i_{BFRSibra}^{2003-11-11}$

 X_i

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a sum of $\sum_{i=1}^{n} r_i$ exponential(λ) random variables.

 $\begin{array}{ccc} \mathsf{IMM} \mbox{-} \mbox{DTU} & 02405 \mbox{ Probability} \\ & 2003-11-11 \\ & 375 \mbox{ is provided generalized. Since } X_i \mbox{ is gamma}(r_i,\lambda) \mbox{ distributed we can write } X_i \mbox{ as } \end{array}$

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where W_{ij} are independent exponential(λ) variables. Thus

$$\sum_{i=1}^{n} X_i = \sum_{i=1}^{n} \sum_{j=1}^{r_i} W_{ij}$$

a sum of $\sum_{i=1}^n r_i$ exponential(λ) random variables. The sum is gamma($\sum_{i=1}^n r_i, \lambda$) distributed.