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**Jane Breen\*** (breenj3@myumanitoba.ca) and **Steve Kirkland**. *Minimising the largest mean first passage time of a Markov chain and the influence of directed graphs.*

For a Markov chain described by an irreducible stochastic matrix  $A$  of order  $n$ , the mean first passage time  $m_{i,j}$  measures the expected time for the Markov chain to reach state  $j$  given that the system begins in state  $i$ , thus quantifying the short-term behaviour of the chain. In this talk, we give a lower bound for the maximum mean first passage time in terms of the stationary distribution vector of  $A$ . We also discuss the characterisation of the directed graphs  $D$  for which any stochastic matrix  $A$  respecting this directed graph attains equality in the lower bound, thus producing a class of Markov chains with optimal short-term behaviour. (Received September 26, 2017)