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第五組	衰退型網路可靠度之評估 Evaluating the Reliability of a Novel Deterioration- Effect Multi-state Flow Network
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摘　要

In a traditional multi-state flow network (MFN), the flow values into and out of any arc are assumed to be equal. In practical application, however, the flow may undergo a loss due to deterioration. For example, electrical power will decrease if the transmission distance is too great. Hence, a novel MFN model called the deterioration-effect MFN (MFN_{de}) is proposed to address this real world problem. A straightforward and simple algorithm based on a novel concept called the deterioration-effect *d*-minimal path (*d*-MP_{de}) is presented to evaluate the reliability of an MFN_{de}, which is defined as the probability that at least *d* units of data can be received by the sink node through the MFN_{de}. The computational complexity of the proposed algorithm is also analyzed. Finally, an example is presented to illustrate how the reliability of an MFN_{de} is calculated using the proposed algorithm.