Rolling Stock Rescheduling Algorithm in Speed Restricted Situations

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Metrological phenomena such as heavy rain or strong wind cause a lot of train delays. When train dispatchers find that the amount of rainfall or the speed of wind exceeds the regulatory values, they have to reduce the speed of trains. However, such a speed restricted situation can cause serious train traffic disruption. In such a disruption case, train dispatchers have to make a train rescheduling plan. In order to support train dispatchers in their decision-making as soon as possible, we developed a train rescheduling algorithm. The algorithm is based on a multi-commodity network flow model which makes it easy to consider the rolling stock schedule. As a result of the application of the algorithm to the real speed restricted scenarios, we found that the algorithm could produce a train rescheduling plan which includes train cancellation and rolling stock rescheduling in a short time.