Appendix A

Detailed descriptions on variables in this paper are as follows.

**Table A1. Detailed descriptions on variables in this paper.**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Significance of variable** | **Significance of subscript and superscript** |
|  | overall mass matrix; | *s* means structure; *v* means vehicle; *t* means TMD |
|  | overall damping matrix; |
|  | overall stiffness matrix; |
|  | column vector of displacement in the overall coordinates |
|  | vertical displacement of car body and wheels; | *c* means car body; *w* means wheel; *a*/*b*/*c*/*d* respectively means wheels' number |
|  | mass of car body and wheels |
|  | wheel's vertical displacement at the junction of axle and wheel; | *s* means structure; *w* means wheel; *a*/*b*/*c*/*d* respectively means wheels' number |
|  | bridge's vertical displacement at the the junction of bridge deck and wheel |
|  | rotational displacement about corresponding coordinate axis | *x*/*y* means coordinate axis; *c* means car body |
|  | stiffness factor of vehicle model | 1 means 1st spring-damping system of car body; 2 means 2nd spring-damping system of car body; *a*/*b*/*c*/*d* respectively means wheels' number |
|  |
|  | damping factor of vehicle model |
|  |
|  | rotational inertia about corresponding coordinate axis | *x*/*y* means coordinate axis; *c* means car body |
|  | car body width; | 1 means left; 2 means right |
|  | distance between the left and right wheels and mass center of car body |
|  | distance between the front and rear axles; | 1 means front; 2 means rear |
|  | distance between the left and right wheels and mass center of car body |
|  | stiffness factor of TMD | *t* means TMD; *k* means the order of TMD |
|  | damping factor of TMD; |
|  | mass of TMD; |
|  | displacement of TMD |
|  | additional damping matrix; | Subscript: *s* means structure; *v* means vehicle; *t* means TMD; *f* means append; *o* means coupling.  Superscript: *v* means the source is vehicle; *t* means the source is TMD |
|  | coupled damping matrix; |
|  | additional stiffness matrix; |
|  | coupled stiffness matrix; |
|  | force vector of vehicle on bridge caused by road irregularity; | *s* means structure; *v* means vehicle; *c* means damping force; *k* means elastic force; *r* means road roughness |
|  | force vector of bridge on vehicle caused by road irregularity; |