Supplementary Material

Table 3. Notations and values of freight train locomotive properties in used in the train-track-bridge model

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|  |  | 3-axle bogie locomotive | Unit |
| $$M\_{c}$$ | car body mass  | $$1.95702E+05$$ | kg |
| $$J\_{c}$$ | car body mass inertia | $$3.4E+06$$ | kg.m2 |
| $$φ\_{c}$$ | car body pitch rotation | - |  |
| $$U\_{c}$$ | car body displacement | - |  |
| $$c\_{s2}$$ | secondary suspension damping | $$120$$ | kN.s/m |
| $$k\_{s2}$$ | secondary suspension stiffness | $$7.87E+03$$ | kN/m |
| $$M\_{bogie}$$ | bogie mass | $$4.903E+03$$ | kg |
| $$J\_{bogie}$$ | bogie mass inertia | $$3629$$ | kg.m2 |
| $$φ\_{bogie}$$ | bogie pitch rotation | - |  |
| $$U\_{bogie}$$ | bogie displacement | - |  |
| $$c\_{s1}$$ | primary suspension damping | $$170$$ | kN.s/m |
| $$k\_{s1}$$ | primary suspension stiffness | $$6E+03$$ | kN/m |
| $$m\_{w}$$ | wheel mass | $$1.018E+03$$ | kg |
| $$U\_{w}$$ | wheel displacement | - |  |
| $$P$$ | wheel-rail interaction force | - |  |
| $$l1$$ | Axle spacing within one bogie  | $$2.0701$$ | m |
| $$l2$$ | Axle spacing within different bogie  | $$8.0518$$ | m |