Supplementary Material

Table 2. Notations and values for the Acela Express train used in the model

|  |
| --- |
| Acela Passenger Train Properties |
| $$M\_{c}$$ | car body mass  | $$6.31E+04$$ | kg |
| $$J\_{c}$$ | car body mass inertia | $$1.20E+06$$ | kg.mm2 |
| $$φ\_{c}$$ | car body pitch rotation | - |  |
| $$U\_{c}$$ | car body displacement | - |  |
| $$c\_{s2}$$ | secondary suspension damping | $$70$$ | kN.s/m |
| $$k\_{s2}$$ | secondary suspension stiffness | $$5.30E+03$$ | kN/m |
| $$M\_{bogie}$$ | bogie mass | $$2.40E+03$$ | kg |
| $$J\_{bogie}$$ | bogie mass inertia | $$760$$ | kg.m2 |
| $$φ\_{bogie}$$ | bogie pitch rotation | - |  |
| $$U\_{bogie}$$ | bogie displacement | - |  |
| $$c\_{s1}$$ | primary suspension damping | $$49$$ | kN.s/m |
| $$k\_{s1}$$ | primary suspension stiffness | $$2.10E+03$$ | kN/m |
| $$m\_{w}$$ | wheel mass | $$1.20E+03$$ | kg |
| $$U\_{w}$$ | wheel displacement | - |  |
| $$P$$ | wheel-rail interaction force | - |  |
| $$a$$ | bogie distance | $$5.37$$ | m |
| $$b$$ | $$wheel distance$$ | $$1.42$$ | m |