

---

# TWO-AXIAL WHEELED VEHICLES MOTION STABILIZATION THROUGH TORQUE BIASING BETWEEN FRONT AND REAR AXES

A.V. Eranosyan

Artem-bmstu@mail.ru

Bauman Moscow State Technical University, Moscow, Russian Federation

---

## Abstract

The study proposes an algorithm of dynamic stabilization system of a two-axle vehicle with a 4×4 wheel arrangement and an add-on front or rear axle, which allows preserving the course and trajectory stability of the car.

## Keywords

Course stability, trajectory stability, dynamic stabilization system, torque biasing between axes

© Bauman Moscow State Technical University, 2017

---

## References

- [1] Zhileykin M.M. Stabilization of motion of two-axle wheeled vehicles through the redistribution of torque between the driving wheels. *Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroenie*. [Proceedings of Higher Educational Institutions. Machine Building], 2017, no. 3, pp. 31–39.
- [2] Mammari S., Baghdassarian V.B. Two-degree-of-freedom formulation of vehicle handling improvement by active steering. *Proc. Amer. Contr. Conf.*, 2000, vol. 1, pp. 105–109.
- [3] Yoshimoto K., Tanaka H., Kawakami S. Proposal of driver assistance system for recovering vehicle stability from unstable states by automatic steering. *Int. Vehicle Electron Conf.*, 1999, pp. 514–519.
- [4] Rodrigues A.O. Evaluation of an active steering system. Master's degree project. Available at: [https://people.kth.se/~kallej/grad\\_students/rodriguez\\_orozco\\_thesis04.pdf](https://people.kth.se/~kallej/grad_students/rodriguez_orozco_thesis04.pdf) (accessed 01 March 2017).
- [5] Langson W., Alleyne A. Multivariable bilinear vehicle control using steering and individual wheel torques. *Proc. Amer. Contr. Conf.*, 1997, vol. 2, pp. 1136–1140.
- [6] Mokhiamar O., Abe M. Active wheel steering and yaw moment control combination to maximize stability as well as vehicle responsiveness during quick lane change for active vehicle handling safety. *J Automobile Eng.*, 2002, vol. 216, no. 2, pp. 115–124.
- [7] Zhileykin M.M. Teoreticheskie osnovy povysheniya pokazateley ustoychivosti i upravly-aemosti kolesnykh mashin na baze metodov nechetkoy logiki [Theoretical foundations of increasing stability and controllability index of wheeled vehicle based on fuzzy logic methods]. Moscow, Bauman Press, 2016. 238 p.
- [8] Smirnov G.A. Teoriya dvizheniya kolesnykh mashin [Wheeled vehicle moving theory]. Moscow, Mashinostroenie publ., 1990. 352 p.

**Eranosyan A.V.** — student, Department of Wheeled Vehicles, Bauman Moscow State Technical University, Moscow, Russian Federation.

**Scientific advisor** — M.M. Zhileykin, Dr. Sc. (Eng.), Professor, Department of Wheeled Vehicles, Bauman Moscow State Technical University, Moscow, Russian Federation.

---