Bachelor thesis opponent's review

Master thesis: **Vehicle slip ration control system for torque vectoring functionality**

Author: **Petr Turnovec**

Thesis supervisor: **Ing. Tomáš Haniš, Ph.D.**

Thesis opponent: **Ing. Petr Liškář**

Rating (1 – 5)
(1 = best; 5 = worst):

1. Fulfillment of assignment requirements:	1
2. Systematic solutions of individual tasks:	1
3. Ability to apply knowledge and to use literature:	1
4. Thesis formal and language level:	1
5. Thesis readability and structuring:	1
6. Thesis professional level:	1
7. Conclusions and their formulation:	1
8. Final mark evaluation (A, B, C, D, E, F):	A
verbal:	excellent

Brief summary evaluation of the thesis (compulsory):

Presented Bachelor thesis fulfills all necessary formal aspects and assigned requirements. It is very well structured, organized, easy to read, yet still on high professional level.

Student clearly demonstrated his ability to develop, implement and compare two solutions of Torque vectoring system, to validate, apply and evaluate the achieved results on the real vehicle.

Even though the model-based-desing is prone to solve the issues in a virtually ideal world, the author of the thesis had never lost an ability to see the true physics behind. This was demonstrated through multiple comments, but also practically. Using the same 100 Hz frequency for the simulation as it is available on the eFormula CAN bus and numerous attempts to solve the noise issue of the slip ratio signal may be the examples.

It was surprising to the reviewer to see the author was satisfied while the Torque vectoring with Slip ratio control to be set in more conservative manner, i.e. to slow down the vehicle at some moments to simplify lateral control for the driver. For a motorsport application, any speed or power gain typically overwhelms other factors and skillful driver is present to handle the situation.

Questions:

1. How would you evaluate handling response on yaw rate from the driver's perspective?

Date: 9th June 2019   Signature: Petr Liškář