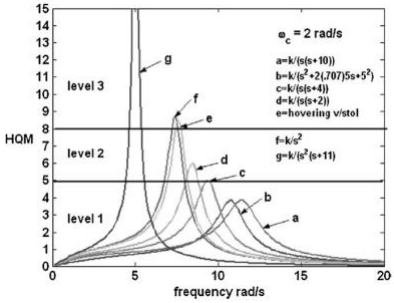
MSc project proposal

Design Rules for Handling Qualities



Together with the Royal Gazelle some work has been done to relate bicycle geometry and rider characteristics to handling qualities [1]. Gazelle likes to get more understanding in the effect parameter changes like wheelbase, trail, head angle and mass distribution on the handling qualities of a bicycle. In order to answer questions like: how can we create a better handling for speedpedelecs, or which geometry/layout fits best for a café-racer? Does the mass of the rider or the position of heavy luggage have a large influence on the handling qualities? Can we design for that?

Assigment:
Study the literature on handling qualities of single-track vehicles (bicycles and motorcycles). Talk to the design people at Gazelle and listen to their wishes and ideas on handling qualities. Develop a number of used cases and show, with the help of a computer model, what the effect of design changes is on the handling qualities. Derive from these used cases a number of design rules for handling quality and test those in real life.

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[1] Carlijn Sluiter, "Bicycle Handling Qualities, finding objective measures for subjective handling qualities", MSc thesis, Delft University of Technology, 3 July 2018.