

MSc project proposal
Bicycle Tire Characteristics



With the novel Wobble tool Royal Gazelle is able to predict possible shimmy behavior for a bicycle from the drawing board. An important and influential parameter in this Wobble tool is the bicycle tire at hand. Unfortunately, little is known about the mechanical characteristics like cornering and camber stiffness of bicycle tires. Tire manufacturers do not report these values for specific tire, often because they are just unknown. For the Royal Gazelle, to make a good choice in which tires to mount on their specific bicycle, there is a need for more insight in these tire characteristics in close connection with the tire manufacturer.

Assignment:

Study the literature tire dynamics [1]. Investigate the current knowledge on bicycle tire and mechanical characteristic. Discuss with a major tire manufacturer and supplier for Gazelle, which information on their tire characteristic they could share with Gazelle, in order to make a good choice in which specific tire to should mount on their specific bicycles. Develop a method to determine unknown tire characteristics needed for the Wobble tool in an easy manner such that bicycle manufacturers can do that for any given tire.

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[1] Hans B. Pacejka, "Tyre and Vehicle Dynamics", 3rd ed, Butterworth-Heinemann, 2012.