

MSc project

Bicycle Tires Modeling and Measurements



Contrary to car and motorcycle tires, little is known about bicycle tires. There is some knowledge on rolling resistance but an experimentally validated model for the lateral tire forces generated by the tire is unknown. Such a model is absolutely necessary to be able to predict the handling of bicycles in various extreme situations. Currently a bicycle tire testrig is under development (see picture) for testing tire characteristics on the large drum tire tester which is available in the TU Delft lab.



Bicycle tire testrig

Assignment: Finish the design and construction of the bicycle tire testrig. Measure lateral tire characteristics (side force, alignment torque versus slip angle and camber angle) for a number of different bicycle tire-wheel combinations. Develop a simplified bicycle tire model (like a brush model), determine the bicycle parameters from the tests and see how the rest of the measured data fits the model predictions.

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