Effects of Road Surface Characteristics & Geometries on Safer User Behavior

**Introduction**

- **50,000** Fatalities among cyclists
- **90%** User Behavior

**Accident Triggers**

- Road
- Vehicle
- User

**Results**

- Calculation of Displacements and Forces
  - Longitudinal force ($F_x$)
  - Lateral force ($F_y$)
  - Side slip angle ($\alpha$)
  - Vertical force ($F_z$)
  - Adhesion coefficient ($\mu$)

**Research Plan**

- Mathematical Modeling of the bicycle simulator:
  - Road Characteristics.
  - Bicycle Dynamic parameters.
  - Aerodynamic resistance.
- Physical Validity.
- Subjective Validity.
- Special needs of disabled and elderly.
- Experimentation with instrumented bicycles in bad weather conditions.

**Work Load & Simulator Sickness**

- The participant tests the simulator for around 10 min.
- The results obtained from experimental studies show the accuracy of the developed model as well as the validity of the simulator.

**References**


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