BRAKING

Objective

- ⇨ Slow down the vehicle when required by the driver
- ⇨ Security system

Determination of the brake balance

Model

- **Hypothesis:**
  - Straight line, no turn
  - Symmetric vehicle
- **Inputs:**
  - Tyre data
  - Vehicle data (dimensions, weight, center of gravity, …)
  - Brake data (master cylinder diameters, calipers, brake pads, brake disc diameter)
  - Brake pedal ratio
  - Brake balance
- **Outputs:**
  - Pressure and force in the brake caliper
  - Force on the brake pedal to bock all 4 wheels

⇨ Pressure inside the system has to be under 70 bars in typical use and 100 bars in high solicitation to ensure a reliable system.

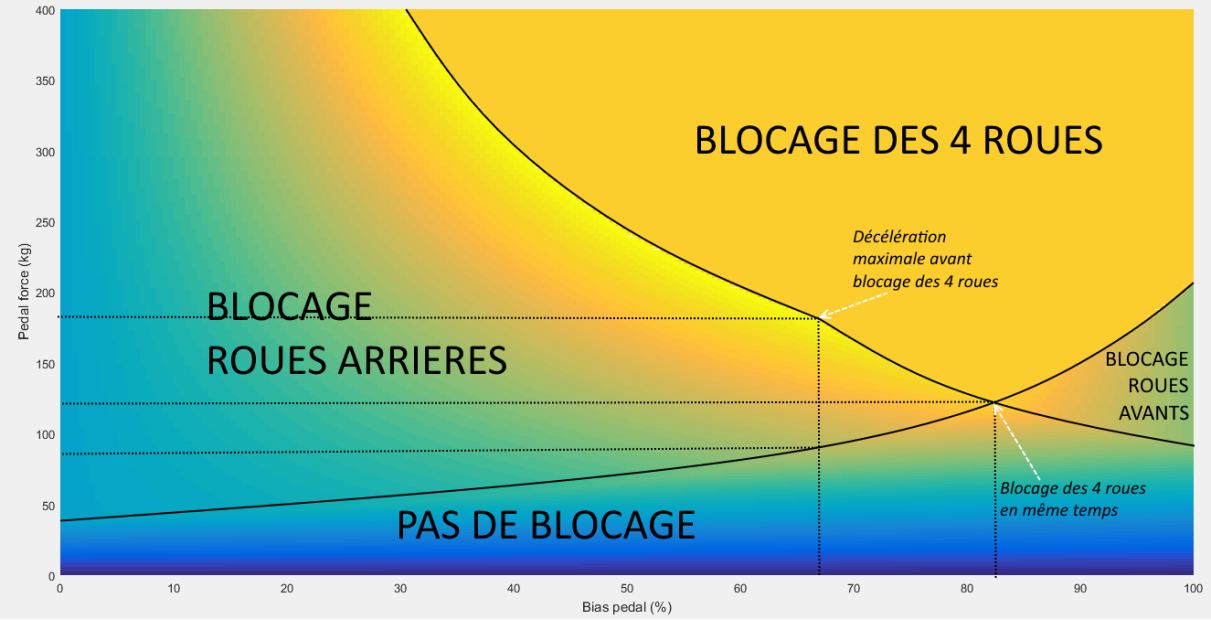

Figure 1: Model used to determine the brake balance

Values

- Brake balance: 65%
- Pedal ratio: 2/3
- Brake pedal force requirement (rules): 2000N
- 35-40kg for typical braking situation
- 50kg on the pedal to block the 4 wheels
- Master cylinder diameters: 14mm and 19.1mm