

0.1 Brakes

0.2 Inputs and outputs

0.2.1 Inputs

Input	Symbol	Unit
Brake Command	β	%
Wheel Speed	ω_t	rad/s

0.2.2 Outputs

Output	Symbol	Unit
Brake Force on Tire	F_b	N

0.2.3 Background, rationale, modeling strategy

The brake is modeled as a friction force and a constant that converts β to a force.

$$F_b = \mu_b \omega_t \beta k_b \quad (1)$$

0.2.4 Variables

Var	Symbol	Unit
Brake Coefficient of Friction	μ_b	$\frac{N}{rad/s}$
Force Constant	k_b	$\frac{N}{\%}$

0.2.5 Assumptions

- Brake percentage to friction force is linear