

E-scooter accelerations & speed database

This site allows access to vibration records and longitudinal speed of a e-scooter (CityCross model) at two different of maximum speed modes (ECO and maximum speeds, about 20 and 28 km/h respectively). The experiment is carried out on real environments, and varying the type of pavement (asphalt and pavers) and the weight of the driver, as next table shows.

Parameter	Values
Drivers (weight)	Driver 01 (90 kg)
	Driver 02 (115 kg)
Wheel pressure	3.5 bar (Front)
	4.2 bar (Rear)
Road pavement types	A (pavers)
	B (asphalt)
Driving modes	ECO (maximum speed 20 km/h)
	MAX (maximum speed 28 km/h)

The database is analysed in the indicated paper on Machines journal. The structure of each document is the following:

1	2036, 375, 430, 366, 534
2	4024, 371, 415, 355, 537
3	6016, 377, 396, 350, 534
4	8012, 386, 375, 343, 534
5	10024, 365, 377, 337, 533
6	12036, 358, 363, 330, 534
7	14020, 362, 355, 330, 534
8	16028, 345, 352, 336, 533

Meaning:

- First column: time in seconds x 10⁻⁶.
- Second column: longitudinal acceleration
 - $Ac_{lon} = 9.8 * (data(:,2) * 4.9 - 1708) / 334$;
- Third column: vertical acceleration
 - $Ac_{ver} = 9.8 * (data(:,3) * 4.9 - 1712) / 347$;
- Fourth column: lateral acceleration
 - $Ac_{lat} = 9.8 * (data(:,4) * 4.9 - 1759) / 342$;
- Fifth column: longitudinal speed
 - Considered radius, R=0.1114 metres.

The next table explains the relation of different cases and related records.

Nº	Pavement	Driver	Réplica	Speed Mode	Record
1	Type A	1	1	ECO	Datos_61
2		2	1	ECO	Datos_62
3		1	2	ECO	Datos_63
4		2	2	ECO	Datos_64
5		1	3	ECO	Datos_65
6		2	3	ECO	Datos_66
7		1	1	MÁX.	Datos_67
8		2	1	MÁX.	Datos_68
9		1	2	MÁX.	Datos_69
10		2	2	MÁX.	Datos_70
11		1	3	MÁX.	Datos_71
12		2	3	MÁX.	Datos_72
13	Type B	1	1	ECO	Datos_73
14		2	1	ECO	Datos_74
15		1	2	ECO	Datos_75
16		2	2	ECO	Datos_76
17		1	3	ECO	Datos_77
18		2	3	ECO	Datos_78
19		1	1	MÁX.	Datos_79
20		2	1	MÁX.	Datos_80
21		1	2	MÁX.	Datos_81
22		2	2	MÁX.	Datos_82
23		1	3	MÁX.	Datos_83
24		2	3	MÁX.	Datos_84

Dr. Juan David Cano-Moreno

juandavid.cano@upm.es

Escuela Técnica Superior de Ingeniería y Diseño Industrial

Universidad Politécnica de Madrid

28012 Madrid - Spain