

Mechanical constants for B2P2 platform

Jean-Luc Paillat, Philippe Lucidarme
and Laurent Hardouin

*LISA, University of Angers, jlpailat@gmail.com, philippe.lucidarme@univ-angers.fr
and laurent.hardouin@istia.univ-angers.fr*

1 Mechanical constants

1.1 Weight

- Mass :
 - Body 1 : 6.356067 *Kg*
 - Body 2 : 0.897066 *Kg*
 - Body 3 : 1.06215 *Kg*

- Density :
 - Body 1 : 2080.745009 *Kg.m⁻³*
 - Body 2 : 1739.217853 *Kg.m⁻³*
 - Body 3 : 2423.47357 *Kg.m⁻³*

1.2 Dimensions

- Length :
 - Body 1 : 0.32 *m*
 - Body 2 : 0.23 *m*
 - Body 3 : 0.226 *m*

- Height : 0.60 *m*

- Width : 0.37 *m*

- Volume :
 - Body 1 : 0.003055 m^3
 - Body 2 : 0.000516 m^3
 - Body 3 : 0.00044 m^3

- Surface area :
 - Body 1 : 1.715140 m^2
 - Body 2 : 0.362876 m^2
 - Body 3 : 0.30692 m^2

1.3 Inertia, Center of Mass

- Inertia Matrix ($Kg.m^2$) :

- Body 1 (defined in the frame R_6) :

$$\begin{pmatrix} 0.128728 & -0.033872 & 0.002259 \\ -0.033872 & 0.363749 & 0.001158 \\ 0.002259 & 0.001158 & 0.283586 \end{pmatrix}$$

- Body 2 (defined in the frame R_7) :

$$\begin{pmatrix} 0.016485 & -0.000107 & 0.000002 \\ -0.000107 & 0.003941 & 0.001773 \\ 0.000002 & 0.001773 & 0.012863 \end{pmatrix}$$

- Body 3 (defined in the frame R_8) :

$$\begin{pmatrix} 0.05229 & 0 & -0.00002 \\ 0 & 0.02964 & 0 \\ -0.00002 & 0 & 0.02523 \end{pmatrix}$$

- Center of Mass :

- Body 1 (in the frame R_6) :

$$\begin{pmatrix} 0.160894 \\ 0.034997 \\ -0.002784 \end{pmatrix}$$

– Body 2 (in the frame R_7) :

$$\begin{pmatrix} -0.000723 \\ -0.104083 \\ 0.014127 \end{pmatrix}$$

– Body 3 (in the frame R_8) :

$$\begin{pmatrix} 0.00009 \\ -0.00001 \\ 0.15268 \end{pmatrix}$$