

# **Relatório EDPs HCV**

para a reuniao do dia 04/05/21

**Resultados DE com codigo C++ com integral de N**

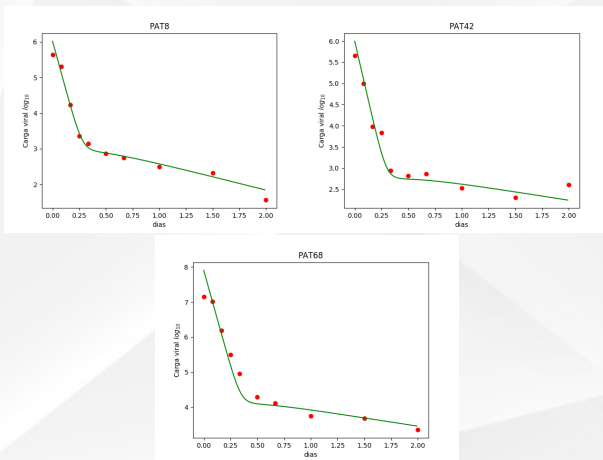
---

Matheus Avila Moreira de Paula

UFJF

- Bounds usadas: Para  $\delta, \mu_t, r, \mu_c, \epsilon_\alpha, \epsilon_r$   
(0.1,0.9),(0.4,0.9),(1,5.8),(1.1,4.5),(0.3,0.999),(0.01,0.8)
- Os outros 4 parâmetros que foram incluídos na DE não tem variação expressiva. Só estão lá para fazer as constraints
- Erro com interpolação polinomial
- Maxiter=10; Pop-size=10
- **Não coloquei as constraints da biblioteca!!! Coloquei as constraints no if do model HCV.h**

- $d = 0.010$ ;  $s = 130000$ ;  $\beta = 5 \cdot \text{pow}(10, -8)$ ;
- $c = 22.30$ ;  $\rho = 8.180$ ;  $\alpha = 30.0$ ;
- $R_{\max} = 50.0$ ;  $\tau = 0.50$ ;  $n = 1.00$ ;  $k = 0.80$ ;
- $\sigma = 1.30$ ;  $\theta = 1.20$ ;  $\epsilon_s = 0.998$ ;  $\kappa_t = 1.00$ ;  $\kappa_c = 1.00$ ;



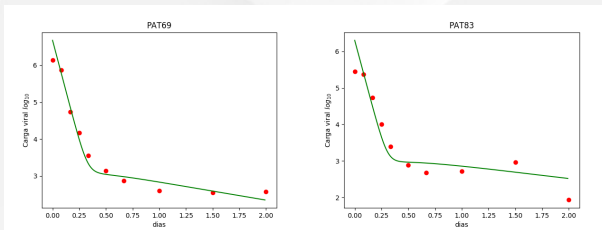


Table: Parametros da tese

Parametro	PAT8	PAT42	PAT68	PAT69	PAT83
$\delta$	0.58	0.64	0.1	0.47	0.62
$\mu_t$	0.89	0.89	0.88	0.89	0.89
$r$	1.49	1.1	5.08	2.24	1.61
$\mu_c$	2.55	1.72	3.38	3.15	2.39
$\epsilon_\alpha$	0.928	0.909	0.992	0.936	0.924
$\epsilon_r$	0.47	0.12	0.61	0.36	0.29
<b>Erro</b>	0.496	0.619	0.69	0.71	0.96

Table: Parametros da DE Matheus

Parametro	PAT8	PAT42	PAT68	PAT69	PAT83
$\delta$	0.54	0.55	0.11	0.65	0.67
$\mu_t$	0.57	0.89	0.707	0.80	0.76
$r$	1.80	2.19	5.78	3.75	3.02
$\mu_c$	4.13	3.99	1.59	4.43	4.44
$\epsilon_\alpha$	0.957	0.72	0.993	0.801	0.687
$\epsilon_r$	0.25	0.12	0.405	0.052	0.092
<b>Erro</b>	1.273	2.35	2.67	2.25	3.35

- Bounds usadas: Para  $\delta, \mu_t, r, \mu_c, \epsilon_\alpha, \epsilon_r$   
(0.1,0.9),(0.4,0.9),(1,5.8),(1.1,4.5),(0.3,0.999),(0.01,0.8)
- Os outros 4 parâmetros que foram incluídos na DE não tem variação expressiva. Só estão lá para fazer as constraints
- Erro apenas com os pontos experimentais
- Maxiter=10; Pop-size=10
- Não coloquei as constraints da biblioteca!!! Coloquei as constraints no if do model HCV.h
- **Os valores do erro ficaram bem menores, porque o cálculo não leva em conta o número de pontos. Ou seja, quanto mais pontos maior vai ser o erro**

`scipy.spatial.distance.euclidean(u, v, w=None)`

Computes the Euclidean distance between two 1-D arrays.

The Euclidean distance between 1-D arrays *u* and *v*, is defined as

$$\left( \sum (w_i |u_i - v_i|^2) \right)^{1/2}$$

**Parameters:** *u* : (N,) array\_like

Input array.

*v* : (N,) array\_like

Input array.

*w* : (N,) array\_like, optional

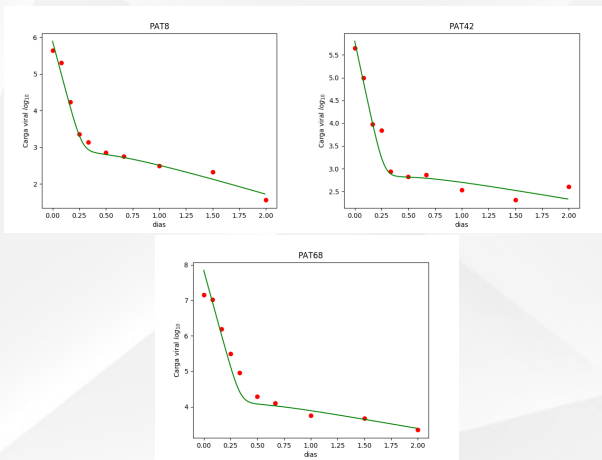
The weights for each value in *u* and *v*. Default is None, which gives each value a weight of 1.0

**Returns:** *euclidean* : double

The Euclidean distance between vectors *u* and *v*.



# Resultados



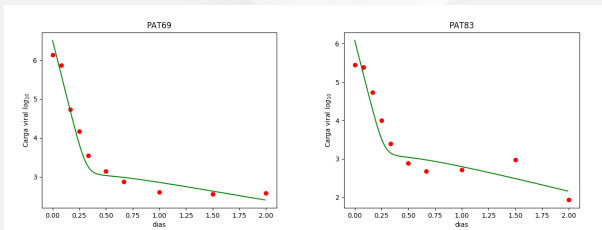


Table: Parametros da tese

Parametro	PAT8	PAT42	PAT68	PAT69	PAT83
$\delta$	0.58	0.64	0.1	0.47	0.62
$\mu_t$	0.89	0.89	0.88	0.89	0.89
$r$	1.49	1.1	5.08	2.24	1.61
$\mu_c$	2.55	1.72	3.38	3.15	2.39
$\epsilon_\alpha$	0.928	0.909	0.992	0.936	0.924
$\epsilon_r$	0.47	0.12	0.61	0.36	0.29
<b>Erro</b>	0.496	0.619	0.69	0.71	0.96

Table: Parametros da DE Matheus

Parametro	PAT8	PAT42	PAT68	PAT69	PAT83
$\delta$	0.73	0.83	0.1	0.697	0.51
$\mu_t$	0.61	0.79	0.66	0.52	0.87
$r$	1.02	1.49	4.97	3.23	1.43
$\mu_c$	3.78	2.64	1.76	4.16	2.31
$\epsilon_\alpha$	0.867	0.76	0.995	0.793	0.91
$\epsilon_r$	0.7997	0.039	0.73	0.0699	0.62
<b>Erro</b>	0.44	0.703	0.899	0.64	1.04

