

Aplicativo Cd 2.1 para o minifoguete Sondinha II padrão (29 Set 2017)



Figura 1. Caixa principal do aplicativo Cd 2.1.

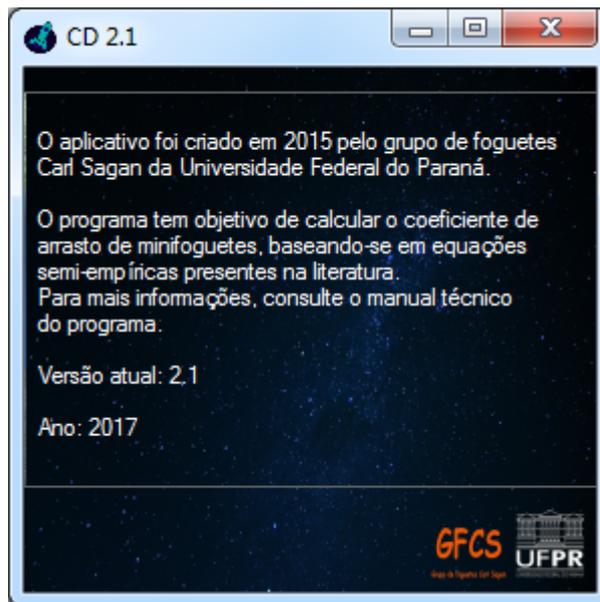


Figura 2. Sobre o aplicativo Cd 2.1.

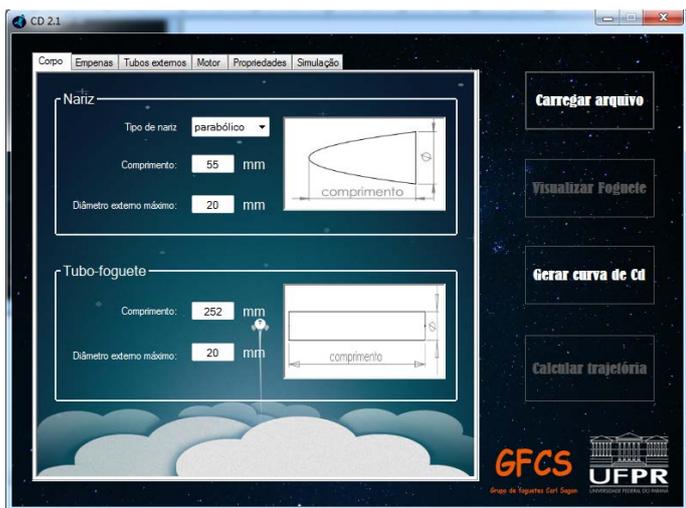


Figura 3. Dados sobre o nariz e tubo-foguete.

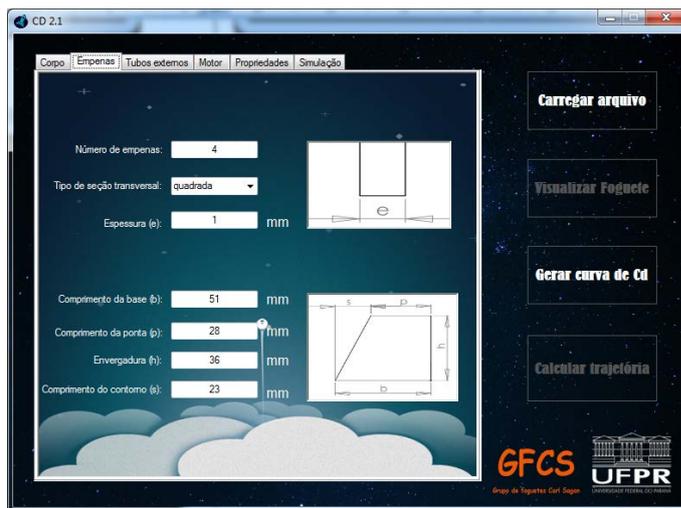


Figura 4. Dados sobre as empenas.



Figura 5. Dados sobre tubos externos.



Figura 6. Dados sobre o motor.



Figura 7. Dados sobre propriedades.



Figura 8. Dados sobre simulação.

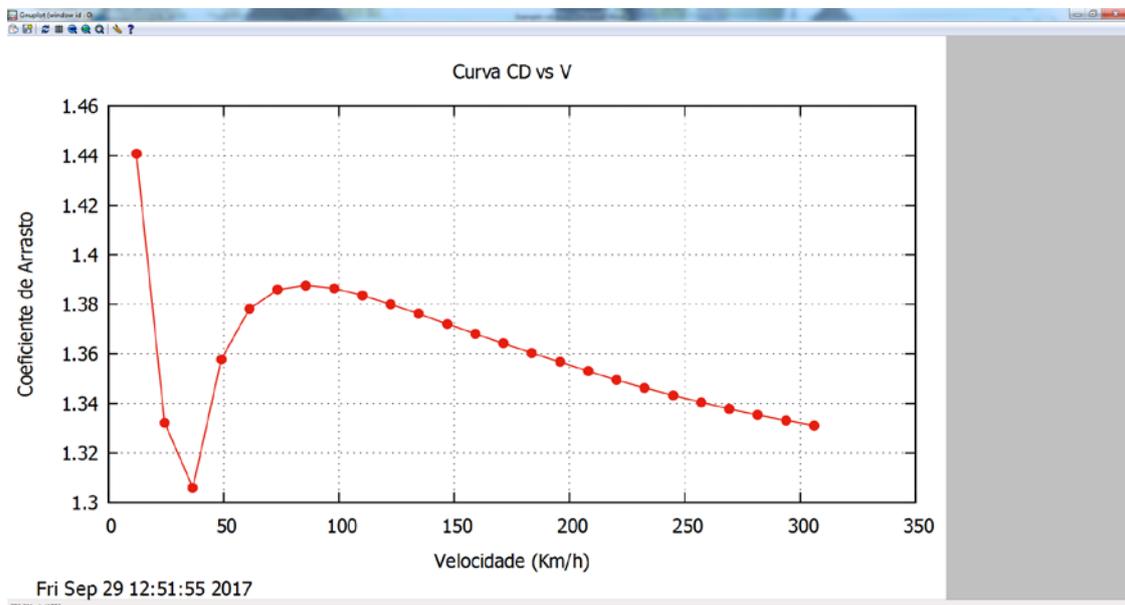


Figura 9. Gráfico do resultado da curva do Cd x velocidade.

Resultado Geral

- Números de pontos do gráfico: 25
- Velocidade máxima analisada (km/h): 306.0
- CD médio: 1.360

Resultado para Mach 0.25

- CD total: 1.331
- Coeficiente de arrasto de atrito: 55.5%
- Coeficiente de arrasto de interferência: 7.9%
- Coeficiente de arrasto de base: 9.6%
- Coeficiente de arrasto de pressão: 25.5%
- Coeficiente de arrasto de tubos externos: 1.5%
- Coeficiente de arrasto de efeitos adversos: 0.0%

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COEFICIENTE DE ARRASTO PARA MACHI = 0.25

COEFICIENTE DE ARRASTO TOTAL: 1.33

Coeficiente de arrasto de atrito: 0.74 (55.5%)
Coeficiente de arrasto de base: 0.13 ( 9.6%)
Coeficiente de arrasto do tubo-guia: 0.02 ( 1.5%)
Coeficiente de arrasto de pressão: 0.34 (25.5%)
Coeficiente de arrasto de interferência: 0.11 ( 7.9%)

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Figura 10. Resultado do Cd médio e componentes do Cd.

# Número de Mach	V (km/h)	Coeficiente de arrasto
1.0000000000000000E-002	12.240000000000000	1.44083148303797
2.0000000000000000E-002	24.480000000000000	1.33221543392464
3.0000000000000000E-002	36.720000000000000	1.30595493864307
4.0000000000000000E-002	48.960000000000000	1.35766204344507
5.0000000000000000E-002	61.200000000000000	1.37815258788858
6.0000000000000000E-002	73.440000000000000	1.38584953425349
7.0000000000000000E-002	85.680000000000000	1.38759030763984
8.0000000000000000E-002	97.920000000000000	1.38635592236007
9.0000000000000000E-002	110.160000000000000	1.38359169833161
0.10000000000000000	122.400000000000000	1.38005205174707
0.11000000000000000	134.640000000000000	1.37615160045415
0.12000000000000000	146.880000000000000	1.37212654933742
0.13000000000000000	159.120000000000000	1.36811435540851
0.14000000000000000	171.360000000000000	1.36419558155512
0.15000000000000000	183.600000000000000	1.36041726589997
0.16000000000000000	195.840000000000000	1.35669540776239
0.17000000000000000	208.080000000000000	1.35298434870325
0.18000000000000000	220.320000000000000	1.34951128414998
0.19000000000000000	232.560000000000000	1.3462733632585
0.20000000000000000	244.800000000000000	1.34324286252694
0.21000000000000000	257.040000000000000	1.34042808519307
0.22000000000000000	269.280000000000000	1.33781335400256
0.23000000000000000	281.520000000000000	1.33538943406904
0.24000000000000000	293.760000000000000	1.33314761052723
0.25000000000000000	306.000000000000000	1.33107970525751

Figura 11. Tabela com resultado do Cd x velocidade usada para o gráfico.

# Número de Mach	V (km/h)	Coeficiente de arrasto
12.240000000000000	1.44083148303797	
24.480000000000000	1.33221543392464	
36.720000000000000	1.30595493864307	
48.960000000000000	1.35766204344507	
61.200000000000000	1.37815258788858	
73.440000000000000	1.38584953425349	
85.680000000000000	1.38759030763984	
97.920000000000000	1.38635592236007	
110.160000000000000	1.38359169833161	
122.400000000000000	1.38005205174707	
134.640000000000000	1.37615160045415	
146.880000000000000	1.37212654933742	
159.120000000000000	1.36811435540851	
171.360000000000000	1.36419558155512	
183.600000000000000	1.36041726589997	
195.840000000000000	1.35669540776239	
208.080000000000000	1.35298434870325	
220.320000000000000	1.34951128414998	
232.560000000000000	1.3462733632585	
244.800000000000000	1.34324286252694	
257.040000000000000	1.34042808519307	
269.280000000000000	1.33781335400256	
281.520000000000000	1.33538943406904	
293.760000000000000	1.33314761052723	
306.000000000000000	1.33107970525751	

Figura 12. Tabela com resultado do Cd x velocidade usada no aplicativo Trajetória 1.1.