```
E_0 = 2.0163 rad

E_1 = 2.0210 rad

E_2 = 2.0210 rad

r = 1.218a

v = 0.802 sqrt(mu / a)

gamma = 0.479 rad

v_c = 0.711 sqrt(mu/a)

v_r = 0.370 sqrt(mu/a)
```