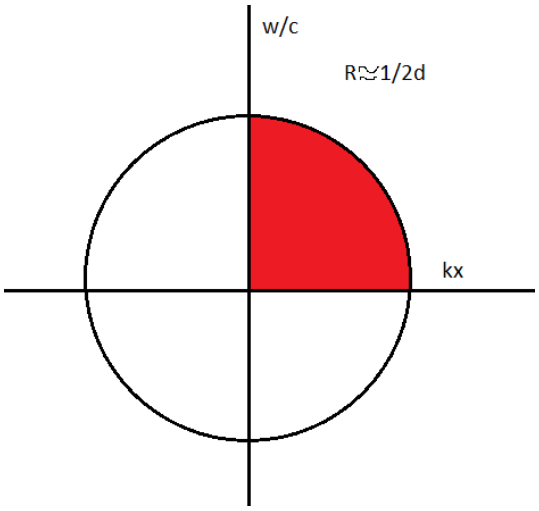
Casimir effect

Let's look on integrant:

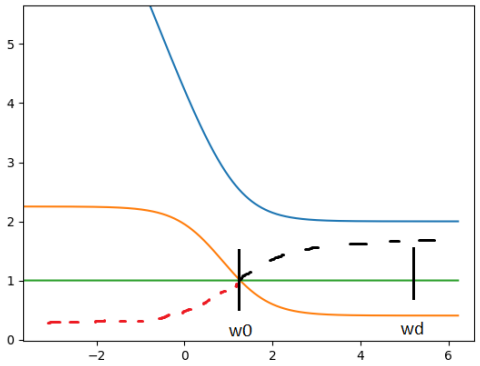
$$(ln(1 - r_s^1 r_s^2 e^{-2d\sqrt{(\frac{w}{c})^2 \varepsilon(iw)+k_x^2}}) + ln(1 - r_p^1 r_p^2 e^{-2d\sqrt{(\frac{w}{c})^2 \varepsilon(w)+k_x^2}}))$$

$$On\ w = i\xi, \xi => 0 : {r_{sp}^i}^2 + {t_{sp}^i}^2 <= 1 -> {r_{sp}^i}^2 <= 1$$

Main region of integration:



let's think about it in another way:



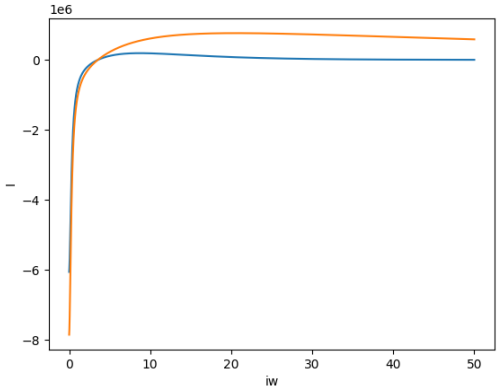
$$U(d) = U_{atr}(d) + U_{rep}(d)$$

$$F(d) = F_{atr}(d) + F_{rep}(d)$$

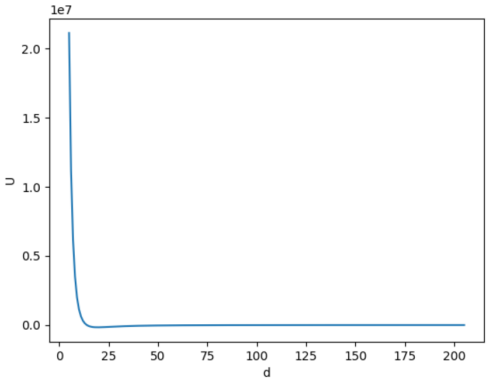
We wish to equal this two forces to get $F = 0$

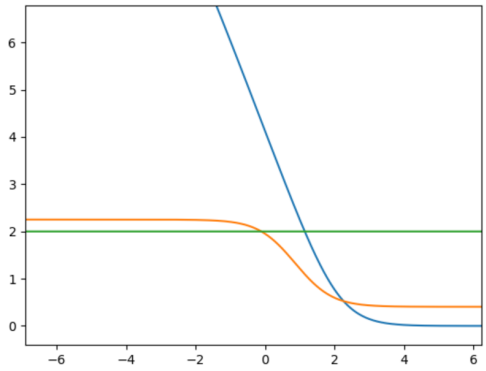
It may happen in region $\frac{c}{2d} = w_d > w_0, d < d0$

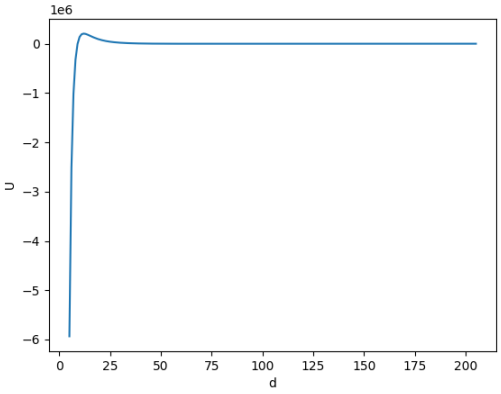
Integrant with different d:

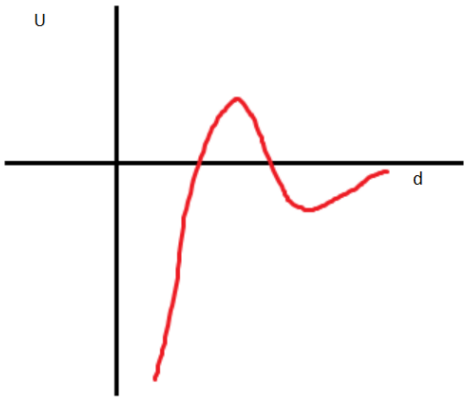


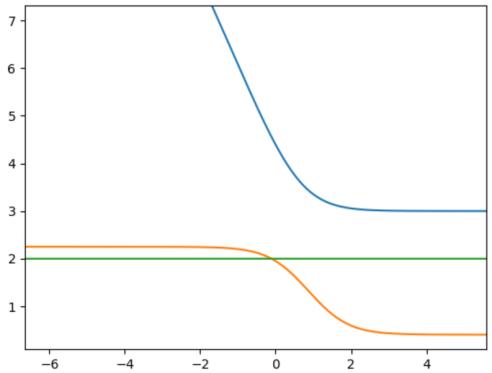
For thsi system, we obtain a minimum:

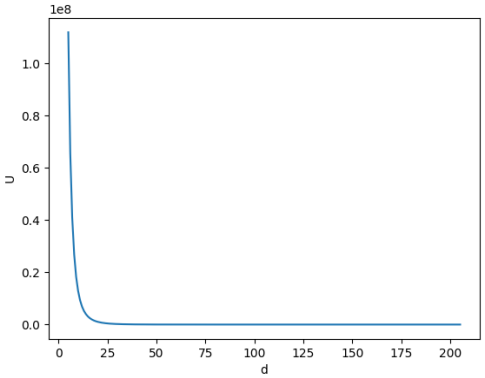





1e6
0
−1
−2
−3
−4
−5
−6
U
0
25
50
75
100
125
150
175
200
d


U
d


7
6
5
4
3
2
1
−6
−4
−2
0
2
4


1e8
1.0
0.8
0.6
0.4
0.2
0.0
U
0
25
50
75
100
125
150
175
200
d