We investigate the following regularisation procedures:

$$\frac{1}{(p^2+\Lambda^2)^{1/2}}, \tag{1}$$

$$\tanh\left(\frac{p}{\Lambda}\right). \tag{2}$$

In both cases, the regulator Λ is chosen such that the value of $\mathrm{Im}V_S(r_d,\Lambda)$ reaches 99% of its asymptotic value $\mathrm{Im}V_S(r\to\infty,\Lambda)$, where r_d is the 'decorrelation length' defined via the flattening of the real part of the potential.

Interestingly, the regulators turn out to be quite similar in both cases.

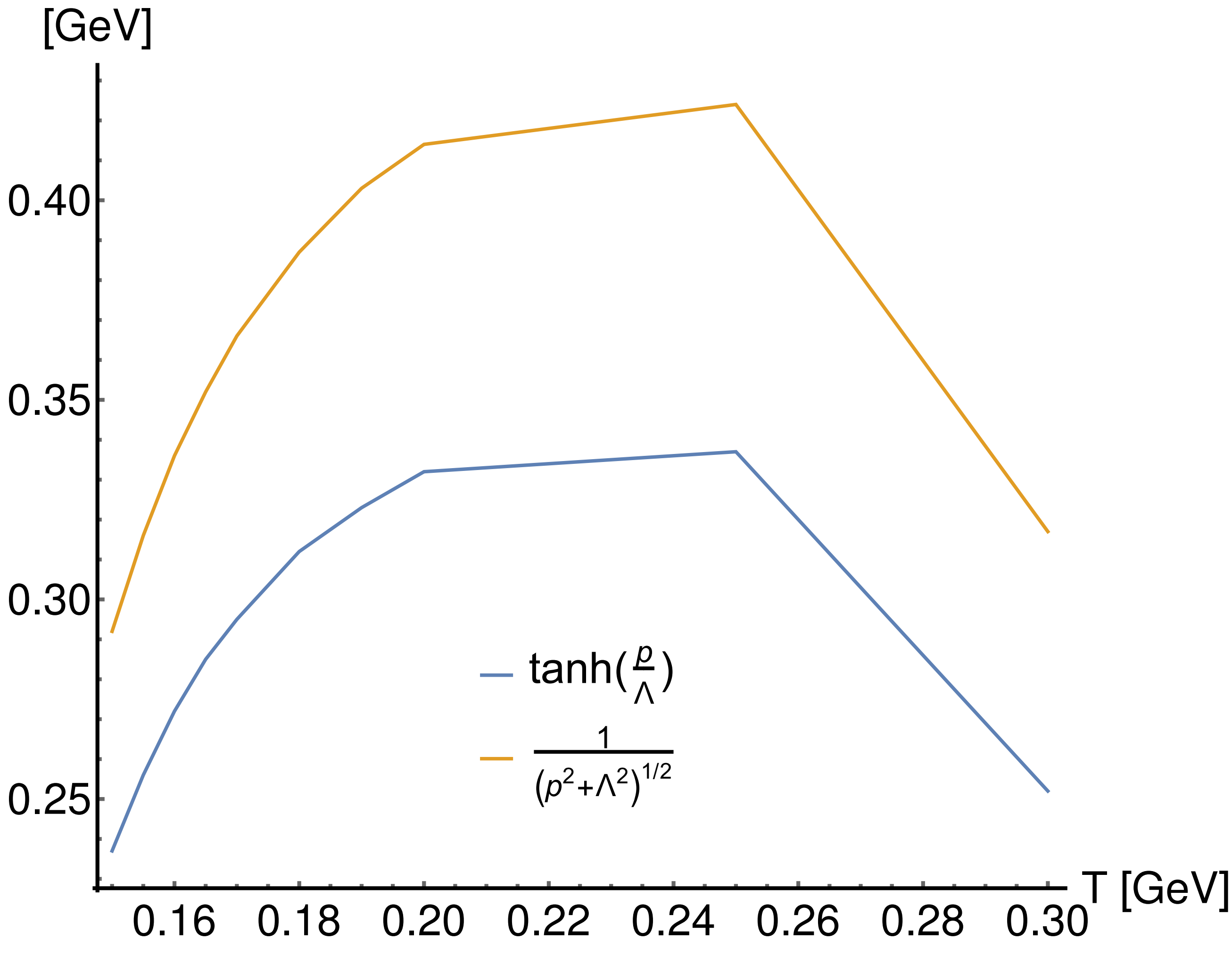

Figure 1: Temperature dependence of the regulators in each case.

Using physical values, the result from using Eq. (??) is

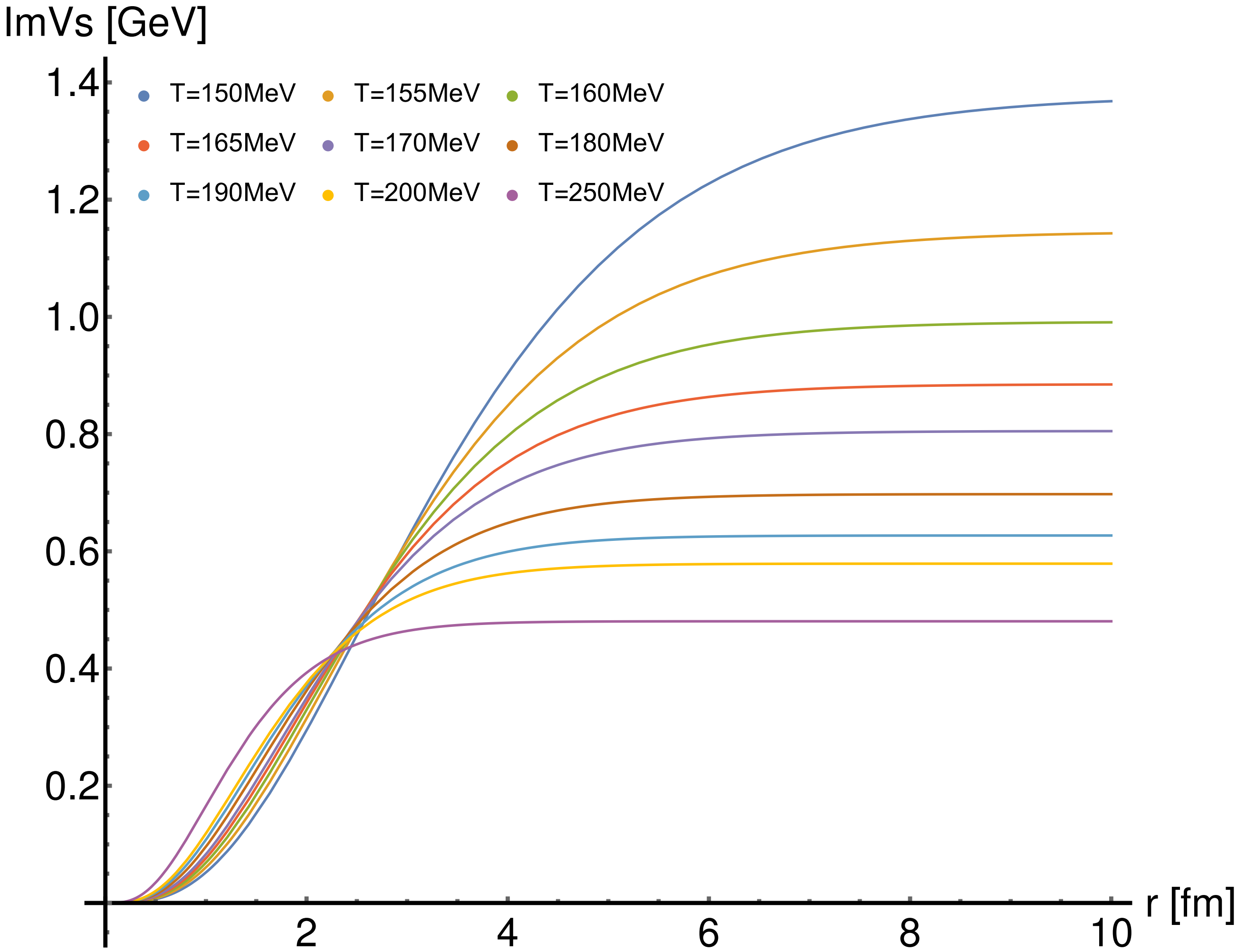

Figure 2: String imaginary part of the potential using Eq. (??).

and from using Eq. (??)

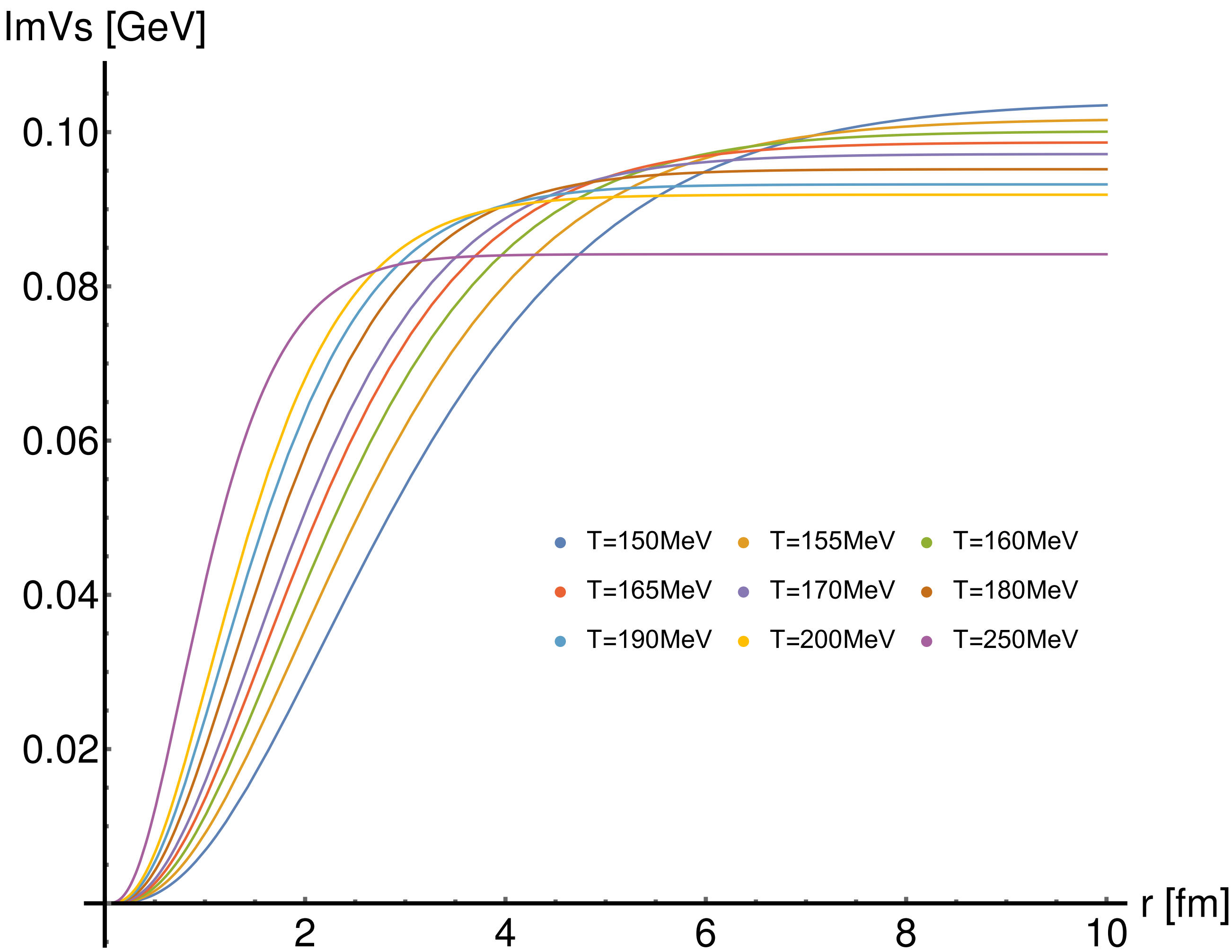

Figure 3: String imaginary part of the potential using Eq. (??).

The lattice fits look as follows

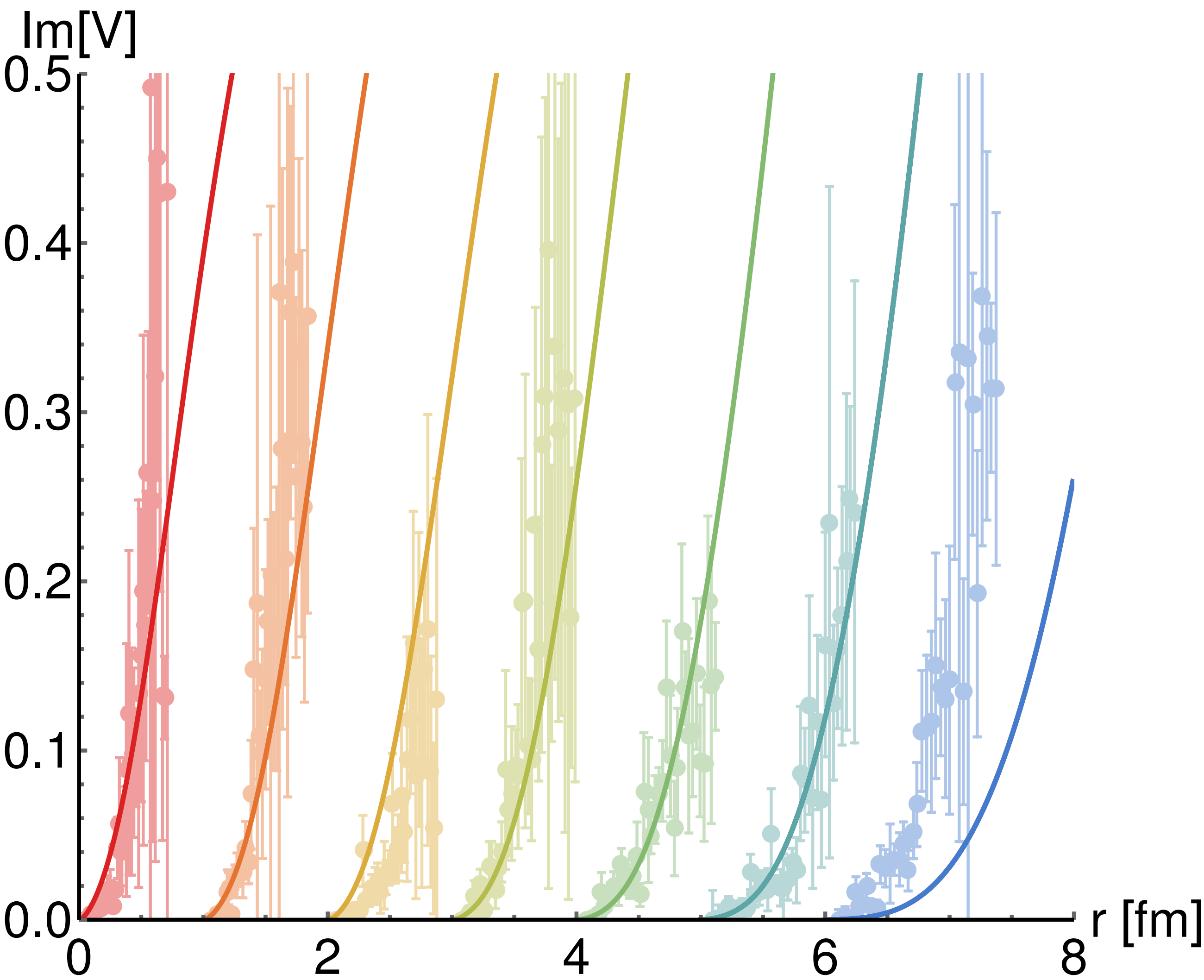

Figure 4: Lattice post-diction of imaginary part of the potential using Eq. (??).

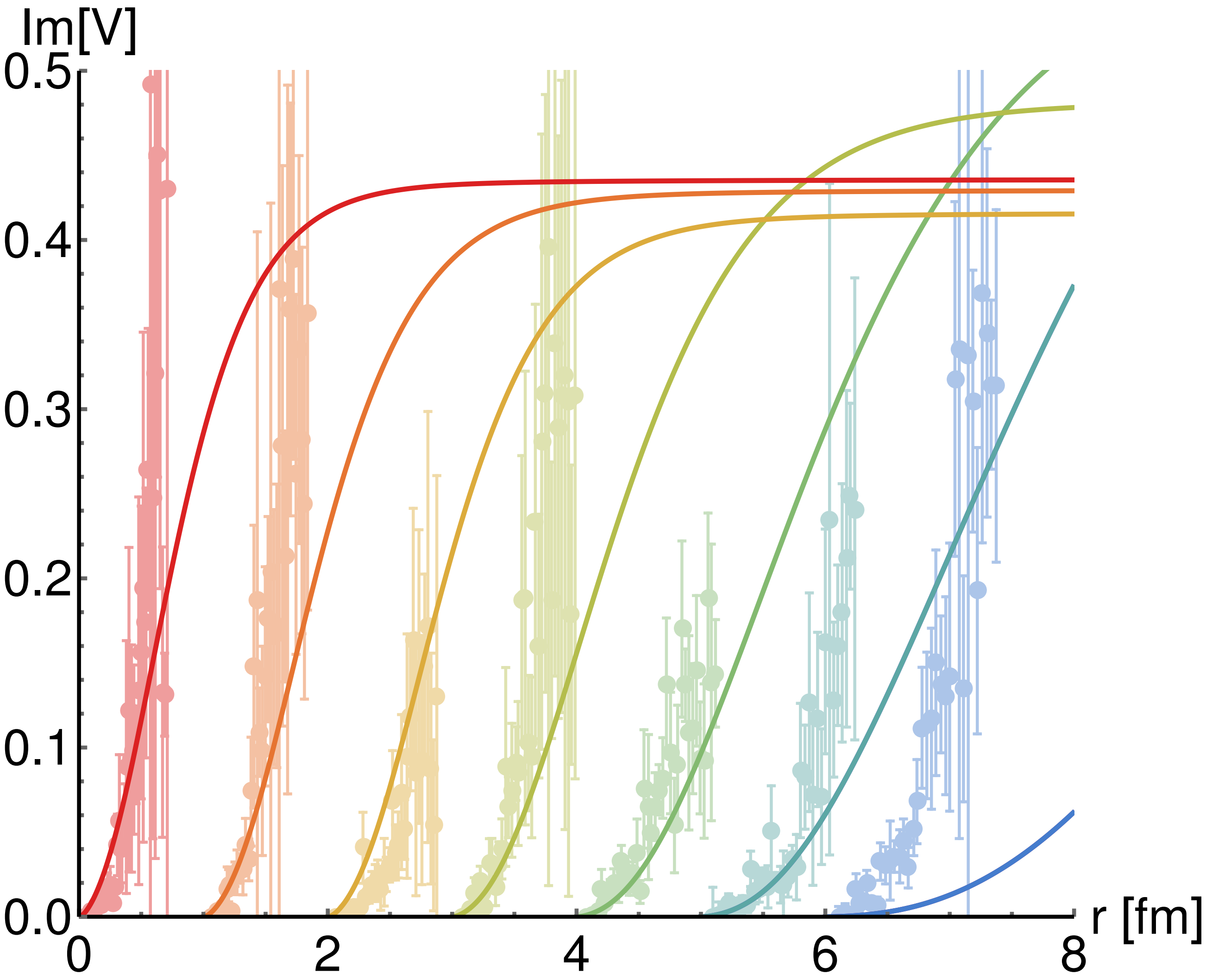

Figure 5: Lattice post-diction of imaginary part of the potential using Eq. (??).

For lower temperatures, the hope was to implement a natural regularisation such that the string imaginary part would flatten off at the thermal string breaking radius r_{sb}, defined as the separation at which the real part of the potential crosses the vacuum threshold for pair creation. However, in both cases this would require a distastefully large regulator.

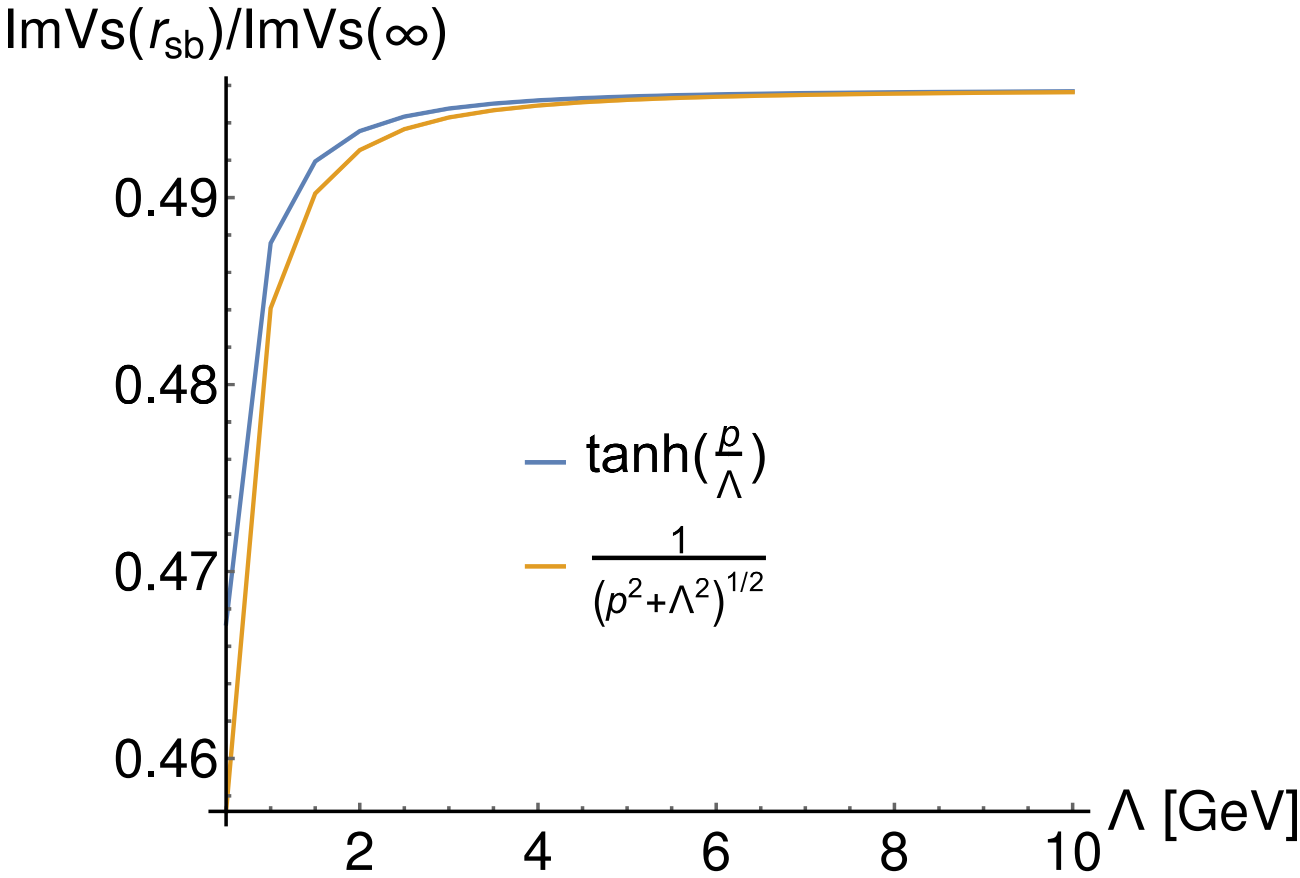

Figure 6: Not quite there.