In[29]:=
```
t = (x - Hres) / alpha
```

Out[29]=
$$\frac{-\text{Hres} + x}{\text{alpha}}$$

In[30]:=
```
ti = (Hmin - Hres) / alpha
```

Out[30]=
$$\frac{\text{Hmin} - \text{Hres}}{\text{alpha}}$$

In[31]:=
```
tf = (Hmax - Hres) / alpha
```

Out[31]=
$$\frac{\text{Hmax} - \text{Hres}}{\text{alpha}}$$

In[32]:=
```
ta = (Ha - Hres) / alpha
```

Out[32]=
$$\frac{\text{Ha} - \text{Hres}}{\text{alpha}}$$

In[33]:=
```
tb = (Hb - Hres) / alpha
```

Out[33]=
$$\frac{\text{Hb} - \text{Hres}}{\text{alpha}}$$

In[34]:=
```
Peq[t_] := chi * (((H0 + alpha * t) * alpha * t + H1 ^ 2) / (Sqrt[(alpha * t) ^ 2 + H1 ^ 2]))
```

In[35]:=
```
Peq[ti]
```

Out[35]=
$$\frac{\text{chi}\ (\text{H1}^2 + (\text{Hmin} - \text{Hres})\ (\text{H0} + \text{Hmin} - \text{Hres}))}{\sqrt{\text{H1}^2 + (\text{Hmin} - \text{Hres})^2}}$$

In[36]:=
```
F1[t] = Exp[-(t - ti) / T1] *
  (Peq[ti] + (1 / T1) * Integrate[Exp[(u - ti) / T1] * chi * (-H0 - alpha * u), {u, ti, t}])
```

Out[36]=
$$E^{\frac{\frac{\text{Hmin}-\text{Hres}}{\text{alpha}} - \frac{-\text{Hres}+x}{\text{alpha}}}{\text{T1}}} \left(\frac{\text{chi}\ (\text{H1}^2 + (\text{Hmin} - \text{Hres})\ (\text{H0} + \text{Hmin} - \text{Hres}))}{\sqrt{\text{H1}^2 + (\text{Hmin} - \text{Hres})^2}} + \frac{-\text{chi T1}\ (-\text{H0} - \text{Hmin} + \text{Hres} + \text{alpha T1}) + \text{chi}\ E^{\frac{-\text{Hmin}+x}{\text{alpha T1}}}\ \text{T1}\ (-\text{H0} + \text{Hres} + \text{alpha T1} - x)}{\text{T1}} \right)$$

In[37]:=
```
Simplify[%]
```

Out[37]=
$$E^{\frac{\text{Hmin}-x}{\text{alpha T1}}} \left(\frac{\text{chi}\ (\text{H1}^2 + (\text{Hmin} - \text{Hres})\ (\text{H0} + \text{Hmin} - \text{Hres}))}{\sqrt{\text{H1}^2 + (\text{Hmin} - \text{Hres})^2}} + \frac{-\text{chi T1}\ (-\text{H0} - \text{Hmin} + \text{Hres} + \text{alpha T1}) + \text{chi}\ E^{\frac{-\text{Hmin}+x}{\text{alpha T1}}}\ \text{T1}\ (-\text{H0} + \text{Hres} + \text{alpha T1} - x)}{\text{T1}} \right)$$

In[38]:=
```
FortranForm[%]
```

```
      E**((Hmin - x)/(alpha*T1))*((chi*(H1**2 + (Hmin - Hres)*(H0 + Hmin - Hres)))/
     -     Sqrt(H1**2 + (Hmin - Hres)**2) +
     -    (-(chi*T1*(-H0 - Hmin + Hres + alpha*T1)) +
     -       chi*E**((-Hmin + x)/(alpha*T1))*T1*(-H0 + Hres + alpha*T1 - x))/T1)
```

```
In[39]:= F2[t] = Exp[-(t - ti) / T1] * (Peq[ti]
          + (1 / T1) * Integrate[Exp[(u - ti) / T1] * chi * (-H0 - alpha * u), {u, ti, ta}]
          + (1 / T1) * Exp[-ti / T1] * Integrate[(1 + u / T1 + (u^2 / (2 * T1^2))) *
            chi * (H1^2 + alpha * u * H0 + alpha^2 * u^2) / Sqrt[H1^2 + alpha^2 * u^2],
           {u, ta, t}])

Integrate::gener : Unable to check convergence
```

$$
\text{Out[39]}= E^{\frac{\frac{Hmin-Hres}{alpha}-\frac{-Hres+x}{alpha}}{T1}}\left(\frac{chi\,(H1^2+(Hmin-Hres)\,(H0+Hmin-Hres))}{\sqrt{H1^2+(Hmin-Hres)^2}}+\right.
$$

$$
\frac{chi\,E^{\frac{Ha-Hmin}{alpha\,T1}}\,T1\,(-H0-Ha+Hres+alpha\,T1)-chi\,T1\,(-H0-Hmin+Hres+alpha\,T1)}{T1}+
$$

$$
\frac{1}{T1}\left(E^{-\frac{Hmin-Hres}{alpha\,T1}}\left(-\frac{1}{48\,alpha^3\,T1^2}\right.\right.
$$

$$
\left(chi\left(\sqrt{H1^2+(Ha-Hres)^2}\;(H1^2\,(3\,Ha-3\,Hres+16\,alpha\,T1)-8\,H0\,(2\,H1^2-Ha^2+\right.\right.
$$

$$
2\,Ha\,Hres-Hres^2-3\,alpha\,Ha\,T1+3\,alpha\,Hres\,T1-6\,alpha^2\,T1^2)+
$$

$$
2\,(Ha-Hres)\,(3\,Ha^2-6\,Ha\,Hres+
$$

$$
3\,Hres^2+8\,alpha\,Ha\,T1-8\,alpha\,Hres\,T1+12\,alpha^2\,T1^2))-
$$

$$
3\,H1^2\,(H1^2+8\,alpha\,T1\,(H0-alpha\,T1))
$$

$$
\left.\left.\left.Log\left[2\left(Ha+\sqrt{H1^2+(Ha-Hres)^2}-Hres\right)\right]\right)\right)+
$$

$$
\frac{1}{48\,alpha^3\,T1^2}
$$

$$
\left(chi\left(-\sqrt{H1^2+(Hres-x)^2}\;(H1^2\,(3\,Hres-16\,alpha\,T1-3\,x)+8\,H0\,(2\,H1^2-Hres^2+\right.\right.
$$

$$
3\,alpha\,Hres\,T1-6\,alpha^2\,T1^2+2\,Hres\,x-3\,alpha\,T1\,x-x^2)+2\,(Hres-x)
$$

$$
(3\,Hres^2-8\,alpha\,Hres\,T1+12\,alpha^2\,T1^2-6\,Hres\,x+8\,alpha\,T1\,x+3\,x^2))-
$$

$$
3\,H1^2\,(H1^2+8\,alpha\,T1\,(H0-alpha\,T1))
$$

$$
\left.\left.\left.\left.\left.Log\left[2\left(-Hres+\sqrt{H1^2+(Hres-x)^2}+x\right)\right]\right)\right)\right)\right)\right)
$$

```
In[40]:= Simplify[%]
```

$$
\text{Out[40]}= E^{\frac{Hmin-x}{alpha\,T1}}\left(\frac{chi\,(H1^2+(Hmin-Hres)\,(H0+Hmin-Hres))}{\sqrt{H1^2+(Hmin-Hres)^2}}+\right.
$$

$$
\frac{chi\,E^{\frac{Ha-Hmin}{alpha\,T1}}\,T1\,(-H0-Ha+Hres+alpha\,T1)-chi\,T1\,(-H0-Hmin+Hres+alpha\,T1)}{T1}+
$$

$$
\frac{1}{48\,alpha^3\,T1^3}
$$

$$
\left(chi\,E^{\frac{-Hmin+Hres}{alpha\,T1}}\left(-\sqrt{H1^2+(Ha-Hres)^2}\;(H1^2\,(3\,Ha-3\,Hres+16\,alpha\,T1)-8\,H0\,(2\,H1^2-Ha^2+\right.\right.
$$

$$
2\,Ha\,Hres-Hres^2-3\,alpha\,Ha\,T1+3\,alpha\,Hres\,T1-6\,alpha^2\,T1^2)+2\,(Ha-Hres)
$$

$$
(3\,Ha^2-6\,Ha\,Hres+3\,Hres^2+8\,alpha\,Ha\,T1-8\,alpha\,Hres\,T1+12\,alpha^2\,T1^2))-
$$

$$
\sqrt{H1^2+(Hres-x)^2}\;(H1^2\,(3\,Hres-16\,alpha\,T1-3\,x)+8\,H0\,(2\,H1^2-Hres^2+
$$

$$
3\,alpha\,Hres\,T1-6\,alpha^2\,T1^2+2\,Hres\,x-3\,alpha\,T1\,x-x^2)+2\,(Hres-x)
$$

$$
(3\,Hres^2+12\,alpha^2\,T1^2+8\,alpha\,T1\,x+3\,x^2-2\,Hres\,(4\,alpha\,T1+3\,x)))+
$$

$$
3\,H1^2\,(H1^2+8\,alpha\,T1\,(H0-alpha\,T1))\,Log\left[2\left(Ha+\sqrt{H1^2+(Ha-Hres)^2}-Hres\right)\right]-
$$

$$
\left.\left.3\,H1^2\,(H1^2+8\,alpha\,T1\,(H0-alpha\,T1))\,Log\left[2\left(-Hres+\sqrt{H1^2+(Hres-x)^2}+x\right)\right]\right)\right)
$$

In[41]:= **FortranForm[%]**

Out[41]//FortranForm=

```
              E**((Hmin - x)/(alpha*T1))*((chi*(H1**2 + (Hmin - Hres)*(H0 + Hmin - Hres)))/
             -     Sqrt(H1**2 + (Hmin - Hres)**2) +
             -    (chi*E**((Ha - Hmin)/(alpha*T1))*T1*(-H0 - Ha + Hres + alpha*T1) -
             -       chi*T1*(-H0 - Hmin + Hres + alpha*T1))/T1 +
             -    (chi*E**((-Hmin + Hres)/(alpha*T1))*
             -       (-(Sqrt(H1**2 + (Ha - Hres)**2)*
             -            (H1**2*(3*Ha - 3*Hres + 16*alpha*T1) -
             -              8*H0*(2*H1**2 - Ha**2 + 2*Ha*Hres - Hres**2 - 3*alpha*Ha*T1 +
      3*alpha*Hres*T1 -
             -                 6*alpha**2*T1**2) +
             -              2*(Ha - Hres)*(3*Ha**2 - 6*Ha*Hres + 3*Hres**2 + 8*alpha*Ha*T1 -
             -                 8*alpha*Hres*T1 + 12*alpha**2*T1**2))) -
             -         Sqrt(H1**2 + (Hres - x)**2)*
             -          (H1**2*(3*Hres - 16*alpha*T1 - 3*x) +
             -            8*H0*(2*H1**2 - Hres**2 + 3*alpha*Hres*T1 - 6*alpha**2*T1**2 +
      2*Hres*x -
             -               3*alpha*T1*x - x**2) +
             -            2*(Hres - x)*(3*Hres**2 + 12*alpha**2*T1**2 + 8*alpha*T1*x + 3*x**2
      -
             -               2*Hres*(4*alpha*T1 + 3*x))) +
             -         3*H1**2*(H1**2 + 8*alpha*T1*(H0 - alpha*T1))*
             -          Log(2*(Ha + Sqrt(H1**2 + (Ha - Hres)**2) - Hres)) -
             -         3*H1**2*(H1**2 + 8*alpha*T1*(H0 - alpha*T1))*
             -          Log(2*(-Hres + Sqrt(H1**2 + (Hres - x)**2) + x))))/
             -     (47.99999999999999*alpha**3*T1**3))
```

In[42]:= **F2[x] /. x -> 0**

```
Integrate::gener : Unable to check convergence
```

Out[42]=

$$E^{\frac{Hmin-Hres}{alpha\,T1}}\left(\frac{chi\,(H1^2+(Hmin-Hres)\,(H0+Hmin-Hres))}{\sqrt{H1^2+(Hmin-Hres)^2}}+\right.$$

$$\frac{chi\,E^{\frac{Ha-Hmin}{alpha\,T1}}\,T1\,(-H0-Ha+Hres+alpha\,T1)-chi\,T1\,(-H0-Hmin+Hres+alpha\,T1)}{T1}+\frac{1}{T1}$$

$$\left(E^{-\frac{Hmin-Hres}{alpha\,T1}}\left(\frac{1}{48\,alpha^3\,T1^2}\left(chi\left(\sqrt{H1^2}\,\left(16\,alpha\,H1^2\,T1+8\,H0\,\left(-2\,H1^2+6\,alpha^2\,T1^2\right)\right)-\right.\right.\right.\right.$$

$$\left.\left.\left.\left.3\,H1^2\,\left(H1^2+8\,alpha\,T1\,(H0-alpha\,T1)\right)\,Log\left[2\,\sqrt{H1^2}\,\right]\right)\right)-\right.$$

$$\frac{1}{48\,alpha^3\,T1^2}\left(chi\right.$$

$$\left(\sqrt{H1^2+(Ha-Hres)^2}\,\left(H1^2\,(3\,Ha-3\,Hres+16\,alpha\,T1)-8\,H0\,\left(2\,H1^2-Ha^2+2\,Ha\,Hres-\right.\right.\right.$$

$$\left.\left.Hres^2-3\,alpha\,Ha\,T1+3\,alpha\,Hres\,T1-6\,alpha^2\,T1^2\right)+2\,(Ha-Hres)$$

$$\left.\left.\left.(3\,Ha^2-6\,Ha\,Hres+3\,Hres^2+8\,alpha\,Ha\,T1-8\,alpha\,Hres\,T1+12\,alpha^2\,T1^2)\right)-\right.\right.$$

$$\left.\left.3\,H1^2\,\left(H1^2+8\,alpha\,T1\,(H0-alpha\,T1)\right)\right.\right.$$

$$\left.\left.\left.\left.\left.Log\left[2\,\left(Ha+\sqrt{H1^2+(Ha-Hres)^2}-Hres\right)\right]\right)\right)\right)\right)\right)\Bigg)$$

In[43]:= **Simplify[%]**

Out[43]=

$$E^{\frac{Hmin-Hres}{alpha\,T1}}\left(\frac{chi\,(H1^2+(Hmin-Hres)\,(H0+Hmin-Hres))}{\sqrt{H1^2+(Hmin-Hres)^2}}+\right.$$

$$\frac{chi\,E^{\frac{Ha-Hmin}{alpha\,T1}}\,T1\,(-H0-Ha+Hres+alpha\,T1)-chi\,T1\,(-H0-Hmin+Hres+alpha\,T1)}{T1}+$$

$$\frac{1}{48\,alpha^3\,T1^3}$$

$$\left(chi\,E^{\frac{-Hmin+Hres}{alpha\,T1}}\,\left(16\sqrt{H1^2}\,\,(-H0\,H1^2+alpha\,H1^2\,T1+3\,alpha^2\,H0\,T1^2)-\sqrt{H1^2+(Ha-Hres)^2}\right.\right.$$

$$(H1^2\,(3\,Ha-3\,Hres+16\,alpha\,T1)-8\,H0\,(2\,H1^2-Ha^2+2\,Ha\,Hres-Hres^2-$$

$$3\,alpha\,Ha\,T1+3\,alpha\,Hres\,T1-6\,alpha^2\,T1^2)+2\,(Ha-Hres)$$

$$(3\,Ha^2-6\,Ha\,Hres+3\,Hres^2+8\,alpha\,Ha\,T1-8\,alpha\,Hres\,T1+12\,alpha^2\,T1^2))-$$

$$3\,H1^2\,(H1^2+8\,alpha\,T1\,(H0-alpha\,T1))\,Log\left[2\sqrt{H1^2}\,\right]+$$

$$\left.\left.\left.3\,H1^2\,(H1^2+8\,alpha\,T1\,(H0-alpha\,T1))\,Log\left[2\left(Ha+\sqrt{H1^2+(Ha-Hres)^2}\,-Hres\right)\right]\right)\right)\right)$$

In[44]:= **FortranForm[%]**

```
Out[44]//FortranForm=
              E**((Hmin - Hres)/(alpha*T1))*((chi*(H1**2 + (Hmin - Hres)*(H0 + Hmin -
      Hres)))/
     -     Sqrt(H1**2 + (Hmin - Hres)**2) +
     -    (chi*E**((Ha - Hmin)/(alpha*T1))*T1*(-H0 - Ha + Hres + alpha*T1) -
     -       chi*T1*(-H0 - Hmin + Hres + alpha*T1))/T1 +
     -    (chi*E**((-Hmin + Hres)/(alpha*T1))*
     -       (16*Sqrt(H1**2)*(-(H0*H1**2) + alpha*H1**2*T1 + 3*alpha**2*H0*T1**2) -
     -         Sqrt(H1**2 + (Ha - Hres)**2)*
     -          (H1**2*(3*Ha - 3*Hres + 16*alpha*T1) -
     -            8*H0*(2*H1**2 - Ha**2 + 2*Ha*Hres - Hres**2 - 3*alpha*Ha*T1 +
      3*alpha*Hres*T1 -
     -               6*alpha**2*T1**2) +
     -            2*(Ha - Hres)*(3*Ha**2 - 6*Ha*Hres + 3*Hres**2 + 8*alpha*Ha*T1 -
     -               8*alpha*Hres*T1 + 12*alpha**2*T1**2)) -
     -         3*H1**2*(H1**2 + 8*alpha*T1*(H0 - alpha*T1))*Log(2*Sqrt(H1**2)) +
     -         3*H1**2*(H1**2 + 8*alpha*T1*(H0 - alpha*T1))*
     -          Log(2*(Ha + Sqrt(H1**2 + (Ha - Hres)**2) - Hres))))/
     -     (47.99999999999999*alpha**3*T1**3))
```

```
In[45]:= F3[t] = Exp[-(t - ti) / T1] * (Peq[ti]
          + (1 / T1) * Integrate[Exp[(u - ti) / T1] * chi * (-H0 - alpha * u), {u, ti, ta}]
          + (1 / T1) * Exp[-ti / T1] * Integrate[(1 + u / T1 + (u^2 / (2 T1^2))) * chi *
            (H1^2 + alpha * u * H0 + alpha^2 * u^2) / Sqrt[H1^2 + alpha^2 * u^2], {u, ta, tb}]
        + (1 / T1) * Integrate[Exp[(u - ti) / T1] * chi * (H0 + alpha * u), {u, tb, t}])

        Integrate::gener : Unable to check convergence
```

$$
\begin{aligned}
\text{Out[45]}= \; & E^{\frac{\frac{Hmin-Hres}{alpha}-\frac{-Hres+x}{alpha}}{T1}} \left(\frac{chi\,(H1^2 + (Hmin - Hres)\,(H0 + Hmin - Hres))}{\sqrt{H1^2 + (Hmin - Hres)^2}} + \right. \\
& \frac{chi\,E^{\frac{Ha-Hmin}{alpha\,T1}}\,T1\,(-H0 - Ha + Hres + alpha\,T1) - chi\,T1\,(-H0 - Hmin + Hres + alpha\,T1)}{T1} + \\
& \frac{chi\,E^{\frac{Hb-Hmin}{alpha\,T1}}\,T1\,(-H0 - Hb + Hres + alpha\,T1) - chi\,E^{\frac{-Hmin+x}{alpha\,T1}}\,T1\,(-H0 + Hres + alpha\,T1 - x)}{T1} + \\
& \frac{1}{T1}\left(E^{-\frac{Hmin-Hres}{alpha\,T1}}\left(-\frac{1}{48\,alpha^3\,T1^2}\right.\right. \\
& \quad \left(chi\left(\sqrt{H1^2 + (Ha - Hres)^2}\;(H1^2\,(3\,Ha - 3\,Hres + 16\,alpha\,T1) - 8\,H0\,(2\,H1^2 - Ha^2 + \right.\right. \\
& \qquad 2\,Ha\,Hres - Hres^2 - 3\,alpha\,Ha\,T1 + 3\,alpha\,Hres\,T1 - 6\,alpha^2\,T1^2) + \\
& \qquad 2\,(Ha - Hres)\,(3\,Ha^2 - 6\,Ha\,Hres + 3\,Hres^2 + \\
& \qquad 8\,alpha\,Ha\,T1 - 8\,alpha\,Hres\,T1 + 12\,alpha^2\,T1^2)) - 3\,H1^2 \\
& \quad (H1^2 + 8\,alpha\,T1\,(H0 - alpha\,T1))\,Log\left[2\left(Ha + \sqrt{H1^2 + (Ha - Hres)^2} - Hres\right)\right]\Big)\Big) + \\
& \frac{1}{48\,alpha^3\,T1^2}\left(chi\right. \\
& \quad \left(\sqrt{H1^2 + (Hb - Hres)^2}\;(H1^2\,(3\,Hb - 3\,Hres + 16\,alpha\,T1) - 8\,H0\,(2\,H1^2 - Hb^2 + 2\,Hb\,Hres - \right. \\
& \qquad Hres^2 - 3\,alpha\,Hb\,T1 + 3\,alpha\,Hres\,T1 - 6\,alpha^2\,T1^2) + 2\,(Hb - Hres) \\
& \qquad (3\,Hb^2 - 6\,Hb\,Hres + 3\,Hres^2 + 8\,alpha\,Hb\,T1 - 8\,alpha\,Hres\,T1 + 12\,alpha^2\,T1^2)) - \\
& \quad 3\,H1^2\,(H1^2 + 8\,alpha\,T1\,(H0 - alpha\,T1)) \\
& \quad \left.\left.\left.\left.\left.\left.Log\left[2\left(Hb + \sqrt{H1^2 + (Hb - Hres)^2} - Hres\right)\right]\right)\right)\right)\right)\right)
\end{aligned}
$$

In[46]:= **Simplify[%]**

Out[46]=

$$E^{\frac{Hmin-x}{alpha\,T1}}\left(\frac{chi\,(H1^2+(Hmin-Hres)\,(H0+Hmin-Hres))}{\sqrt{H1^2+(Hmin-Hres)^2}}+\right.$$

$$\frac{chi\,E^{\frac{Ha-Hmin}{alpha\,T1}}\,T1\,(-H0-Ha+Hres+alpha\,T1)-chi\,T1\,(-H0-Hmin+Hres+alpha\,T1)}{T1}+$$

$$\frac{chi\,E^{\frac{Hb-Hmin}{alpha\,T1}}\,T1\,(-H0-Hb+Hres+alpha\,T1)-chi\,E^{\frac{-Hmin+x}{alpha\,T1}}\,T1\,(-H0+Hres+alpha\,T1-x)}{T1}+$$

$$\frac{1}{48\,alpha^3\,T1^3}$$

$$\left(chi\,E^{\frac{-Hmin+Hres}{alpha\,T1}}\,\left(-\sqrt{H1^2+(Ha-Hres)^2}\,\left(H1^2\,(3\,Ha-3\,Hres+16\,alpha\,T1)-8\,H0\,(2\,H1^2-Ha^2+\right.\right.\right.$$

$$2\,Ha\,Hres-Hres^2-3\,alpha\,Ha\,T1+3\,alpha\,Hres\,T1-6\,alpha^2\,T1^2)+2\,(Ha-Hres)$$

$$(3\,Ha^2-6\,Ha\,Hres+3\,Hres^2+8\,alpha\,Ha\,T1-8\,alpha\,Hres\,T1+12\,alpha^2\,T1^2))+$$

$$\sqrt{H1^2+(Hb-Hres)^2}\,\left(H1^2\,(3\,Hb-3\,Hres+16\,alpha\,T1)-8\,H0\,(2\,H1^2-Hb^2+2\,Hb\,Hres-\right.$$

$$Hres^2-3\,alpha\,Hb\,T1+3\,alpha\,Hres\,T1-6\,alpha^2\,T1^2)+2\,(Hb-Hres)$$

$$(3\,Hb^2-6\,Hb\,Hres+3\,Hres^2+8\,alpha\,Hb\,T1-8\,alpha\,Hres\,T1+12\,alpha^2\,T1^2))+$$

$$3\,H1^2\,(H1^2+8\,alpha\,T1\,(H0-alpha\,T1))\,Log\left[2\left(Ha+\sqrt{H1^2+(Ha-Hres)^2}-Hres\right)\right]-$$

$$\left.\left.\left.3\,H1^2\,(H1^2+8\,alpha\,T1\,(H0-alpha\,T1))\,Log\left[2\left(Hb+\sqrt{H1^2+(Hb-Hres)^2}-Hres\right)\right]\right)\right)\right)$$

In[47]:= **FortranForm[%]**

Out[47]//FortranForm=

```
      E**((Hmin - x)/(alpha*T1))*((chi*(H1**2 + (Hmin - Hres)*(H0 + Hmin - Hres)))/
     -     Sqrt(H1**2 + (Hmin - Hres)**2) +
     -    (chi*E**((Ha - Hmin)/(alpha*T1))*T1*(-H0 - Ha + Hres + alpha*T1) -
     -       chi*T1*(-H0 - Hmin + Hres + alpha*T1))/T1 +
     -    (chi*E**((Hb - Hmin)/(alpha*T1))*T1*(-H0 - Hb + Hres + alpha*T1) -
     -       chi*E**((-Hmin + x)/(alpha*T1))*T1*(-H0 + Hres + alpha*T1 - x))/T1 +
     -    (chi*E**((-Hmin + Hres)/(alpha*T1))*
     -       (-(Sqrt(H1**2 + (Ha - Hres)**2)*
     -            (H1**2*(3*Ha - 3*Hres + 16*alpha*T1) -
     -              8*H0*(2*H1**2 - Ha**2 + 2*Ha*Hres - Hres**2 - 3*alpha*Ha*T1 +
     3*alpha*Hres*T1 -
     -                 6*alpha**2*T1**2) +
     -              2*(Ha - Hres)*(3*Ha**2 - 6*Ha*Hres + 3*Hres**2 + 8*alpha*Ha*T1 -
     -                 8*alpha*Hres*T1 + 12*alpha**2*T1**2))) +
     -         Sqrt(H1**2 + (Hb - Hres)**2)*
     -          (H1**2*(3*Hb - 3*Hres + 16*alpha*T1) -
     -            8*H0*(2*H1**2 - Hb**2 + 2*Hb*Hres - Hres**2 - 3*alpha*Hb*T1 +
     3*alpha*Hres*T1 -
     -               6*alpha**2*T1**2) +
     -            2*(Hb - Hres)*(3*Hb**2 - 6*Hb*Hres + 3*Hres**2 + 8*alpha*Hb*T1 -
     -               8*alpha*Hres*T1 + 12*alpha**2*T1**2)) +
     -         3*H1**2*(H1**2 + 8*alpha*T1*(H0 - alpha*T1))*
     -          Log(2*(Ha + Sqrt(H1**2 + (Ha - Hres)**2) - Hres)) -
     -         3*H1**2*(H1**2 + 8*alpha*T1*(H0 - alpha*T1))*
     -          Log(2*(Hb + Sqrt(H1**2 + (Hb - Hres)**2) - Hres))))/
     -     (47.99999999999999*alpha**3*T1**3))
```