

In[]:= **c2 = 1.67066**

Out[]:=
1.67066

In[]:= **1.67066`**
H = N[Tan[35 °]]
L = N[Sin[35 °]]
R = N[Cos[35 °]]

Out[]:=
1.67066

Out[]:=
0.700208

Out[]:=
0.573576

Out[]:=
0.819152

In[]:= **c3 = 22.507**

Out[]:=
22.507

In[]:= **α = 0.2**

Out[]:=
0.2

In[]:= **$\delta_1 = -3 / 2$**

Out[]:=
 $-\frac{3}{2}$

In[]:= **$\delta_2 = -3 / 8$**

Out[]:=
 $-\frac{3}{8}$

In[]:= **k = 0.190**

Out[]:=
0.19

In[]:= **f = 0.033**

Out[]:=
0.033

In[]:= **mD = 1.876**

Out[]:=
1.876

In[]:= **mN = 0.94**

Out[]:=
0.94

In[]:= **$\pi = 3.14$**

Set: Symbol π is Protected. [i](#)

Out[]:=
3.14

In[]:=
$$\rho[T_] = \left(\frac{9 * \pi^2 * \alpha}{16} + \delta_1 \right) * \frac{T^2}{12 * f^2} + \delta_2 * \left(\frac{T^2}{12 * f^2} \right)^2$$

Out[]:=
 $-29.8186 T^2 - 2195.9 T^4$

In[]:= **$K[T_] = k * \sqrt{(1 + \rho[T])}$**

Out[]:=
 $0.19 \sqrt{1 - 29.8186 T^2 - 2195.9 T^4}$

In[]:= **$a[Q_, T_] = \frac{Q^2}{4 * K[T]^2}$**

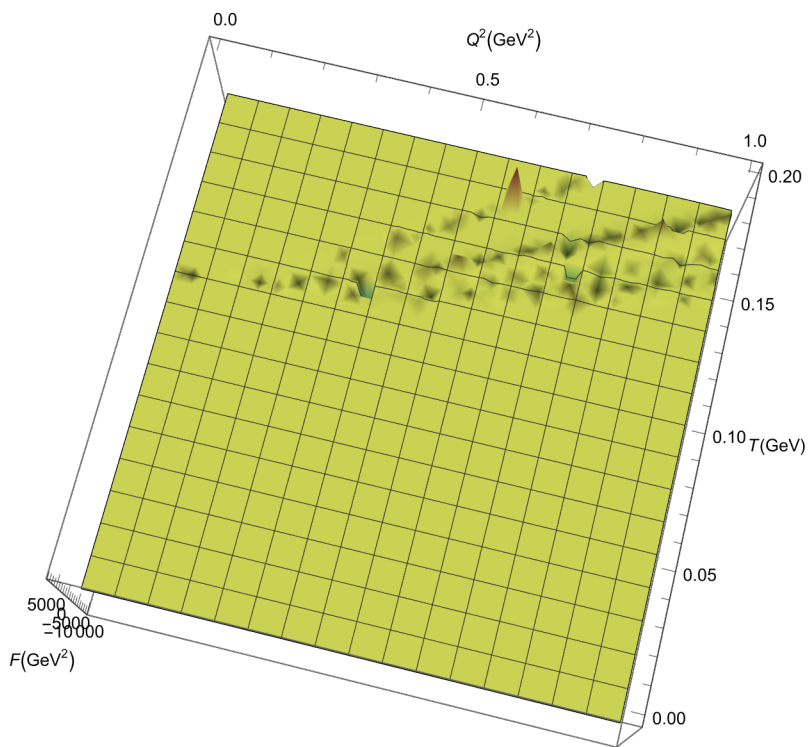
Out[]:=
$$\frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}$$

In[]:= **$F[Q_, T_] = \frac{\text{Gamma}[6] * \text{Gamma}[a[Q, T] + 1]}{\text{Gamma}[a[Q, T] + 6]}$**

Out[]:=
$$\frac{120 \text{Gamma}\left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}{\text{Gamma}\left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}$$

```
In[ ]:= Plot3D[F[Q, T], {Q, 0, 1}, {T, 0, 0.2}, AxesLabel -> {Q^2[GeV^2], T[GeV], F[GeV^2]},
ColorFunction -> (ColorData["DarkRainbow"][#3] &), PlotRange -> All]
```

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Out[ ]:=
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```
In[ ]:= G1[Q_, T_] = F[Q, T]
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```
Out[ ]:=
```

$$\frac{120 \text{ Gamma} \left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4} \right]}{\text{Gamma} \left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4} \right]}$$

```
In[ ]:= G2[Q_, T_] = c2 * F[Q, T]
```

```
Out[ ]:=
```

$$\frac{200.479 \text{ Gamma} \left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4} \right]}{\text{Gamma} \left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4} \right]}$$

```
In[ ]:= G3[Q_, T_] = c3 * F[Q, T]
```

```
Out[ ]:=
```

$$\frac{2700.84 \text{ Gamma} \left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4} \right]}{\text{Gamma} \left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4} \right]}$$

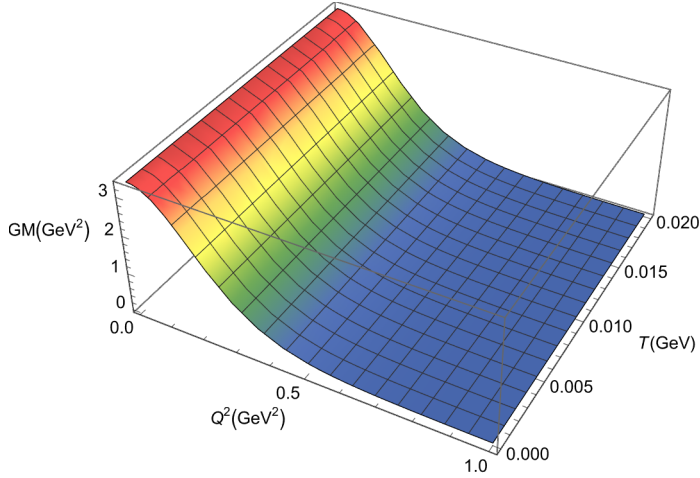
$$\text{In}[*]:= \text{GM}[Q_ , T_] = \frac{mD}{mN} * G2[Q, T]$$

Out[*]=

$$\frac{400.105 \text{ Gamma}\left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}{\text{Gamma}\left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}$$

Plot3D[GM[Q, T], {Q, 0, 1}, {T, 0, 0.2}, AxesLabel → {Q²[GeV²], T[GeV], GM[GeV²]},
ColorFunction → (ColorData["DarkRainbow"][#3] &), PlotRange → All]

Out[*]=



$$\text{In}[*]:= \tau[Q_] = \frac{Q^2}{4 * mD^2}$$

Out[*]=

$$0.0710353 Q^2$$

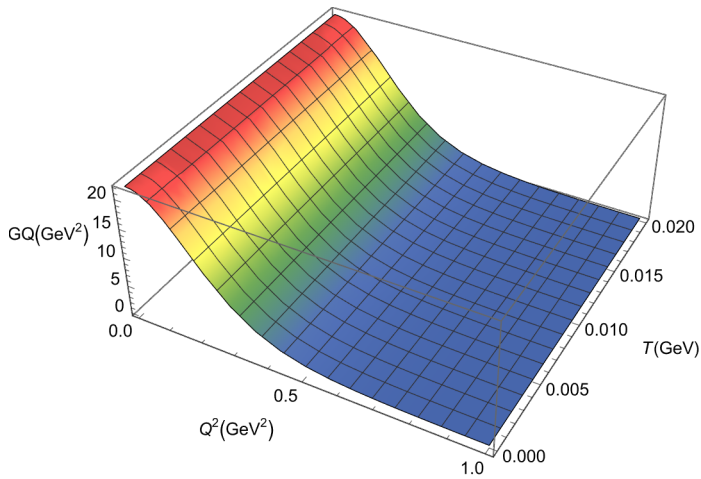
$$\text{In}[*]:= \text{GQ}[Q_ , T_] = \text{G1}[Q, T] - \text{G2}[Q, T] + (1 + \tau[Q]) * \text{G3}[Q, T]$$

Out[*]=

$$-\frac{80.4792 \text{ Gamma}\left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}{\text{Gamma}\left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]} + \frac{2700.84 (1 + 0.0710353 Q^2) \text{ Gamma}\left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}{\text{Gamma}\left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}$$

```
Plot3D[GQ[Q, T], {Q, 0, 1}, {T, 0, 0.2}, AxesLabel → {Q2[GeV2], T[GeV], GQ[GeV2]},
ColorFunction → (ColorData["DarkRainbow"][#3] &), PlotRange → All]
```

Out[8]=



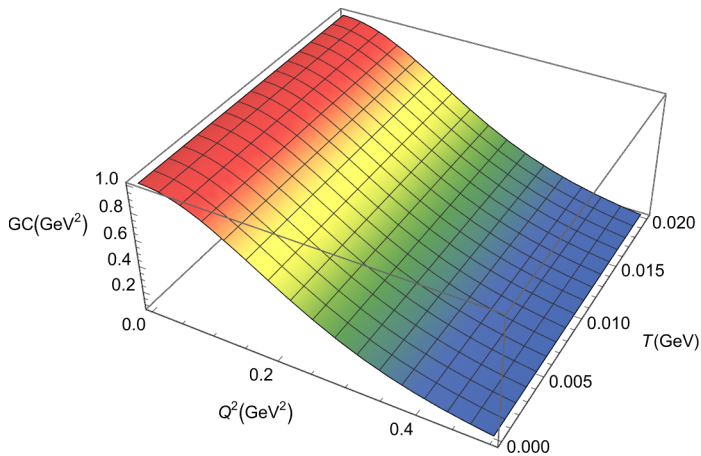
```
In[9]:= GC[Q_, T_] = G1[Q, T] +  $\frac{2}{3}$   $\tau$ [Q] * GQ[Q, T]
```

Out[9]=

$$0.0473569 Q^2 \left(-\frac{80.4792 \operatorname{Gamma}\left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}{\operatorname{Gamma}\left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]} + \frac{2700.84 (1 + 0.0710353 Q^2) \operatorname{Gamma}\left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}{\operatorname{Gamma}\left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]} \right) + \frac{120 \operatorname{Gamma}\left[1 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}{\operatorname{Gamma}\left[6 + \frac{6.92521 Q^2}{1 - 29.8186 T^2 - 2195.9 T^4}\right]}$$

```
Plot3D[GC[Q, T], {Q, 0, 0.5}, {T, 0, 0.2}, AxesLabel → {Q2[GeV2], T[GeV], GC[GeV2]}, PlotRange → All,
ColorFunction → (ColorData["DarkRainbow"][#3] &), PlotRange → All]
```

Out[10]=



```

A[Q_, T_] =
  GC[Q, T] * GC[Q, T] +  $\frac{2}{3}$  *  $\tau$ [Q] * GM[Q, T] * GM[Q, T] +  $\frac{8}{9}$  *  $\tau$ [Q] *  $\tau$ [Q] * GQ[Q, T] * GQ[Q, T]

B[Q_, T_] =  $\frac{4}{3}$  *  $\tau$ [Q] * (1 +  $\tau$ [Q]) * GM[Q, T] * GM[Q, T]
S[Q_, T_] = A[Q, T] + (B[Q, T] * H * H)

t1[Q_, T_] :=
  -  $\frac{1}{\text{Sqrt}[2] * S[Q, T]}$   $\left( \frac{8}{3} * \tau[Q] * GC[Q, T] * GQ[Q, T] + \frac{8}{9} * \tau[Q] * \tau[Q] * GQ[Q, T] * GQ[Q, T] + \right.$ 
 $\left. \frac{\tau[Q]}{3} * (1 + 2 * (1 + \tau[Q]) * H * H) * GM[Q, T] * GM[Q, T] \right)$ 

t2[Q_, T_] := -  $\left( \frac{2 * \tau[Q] * \text{Sqrt}[\tau[Q] + \tau[Q] * \tau[Q] * L * L] * GM[Q, T] * GQ[Q, T]}{\text{Sqrt}[3] * S[Q, T] * R} \right)$ 

t3[Q_, T_] := -  $\left( \frac{\tau[Q] * GM[Q, T] * GM[Q, T]}{2 * \text{Sqrt}[3] * S[Q, T]} \right)$ 

t4[Q_, T_] :=  $\left( \frac{GQ[Q, T]}{25.83} * \frac{GC[Q, T] + \frac{\tau[Q]}{3} * GQ[Q, T]}{GC[Q, T] * GC[Q, T] + \frac{8}{9} * \tau[Q] * \tau[Q] * GQ[Q, T] * GQ[Q, T]} \right)$ 

Plot3D[A[Q, T], {Q, 0, 1}, {T, 0, 0.2}, AxesLabel → {Q^2[GeV^2], T[GeV], A},
  ColorFunction → (ColorData["DarkRainbow"])[#3] &), PlotRange → All]
Plot3D[B[Q, T], {Q, 0, 1}, {T, 0, 0.2}, AxesLabel → {Q^2[GeV^2], T[GeV], B},
  ColorFunction → (ColorData["DarkRainbow"])[#3] &), PlotRange → All]
Plot3D[t1[Q, T], {Q, 0, 1}, {T, 0, 0.2}, AxesLabel → {Q^2[GeV^2], T[GeV], t1},
  ColorFunction → (ColorData["DarkRainbow"])[#3] &), PlotRange → All]
Plot3D[t2[Q, T], {Q, 0, 1}, {T, 0, 0.2}, AxesLabel → {Q^2[GeV^2], T[GeV], t2},
  ColorFunction → (ColorData["DarkRainbow"])[#3] &), PlotRange → All]
Plot3D[t3[Q, T], {Q, 0, 1}, {T, 0, 0.2}, AxesLabel → {Q^2[GeV^2], T[GeV], t3},
  ColorFunction → (ColorData["DarkRainbow"])[#3] &), PlotRange → All]
Plot3D[t4[Q, T], {Q, 0, 1}, {T, 0, 0.2}, AxesLabel → {Q^2[GeV^2], T[GeV], t4},
  ColorFunction → (ColorData["DarkRainbow"])[#3] &), PlotRange → All]

```

Out[8]=

$$\begin{aligned}
& \left(0.0473569 Q^2 \left(- \frac{80.4792 \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} + \right. \right. \\
& \quad \left. \left. \frac{2700.84 (1 + 0.0710353 Q^2) \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} \right) + \right. \\
& \quad \left. \frac{120 \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} \right)^2 + 0.00448535 Q^4 \left(- \frac{80.4792 \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} + \right. \\
& \quad \left. \frac{2700.84 (1 + 0.0710353 Q^2) \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} \right)^2 + \\
& \quad \frac{7581.09 Q^2 \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]^2}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]^2}
\end{aligned}$$

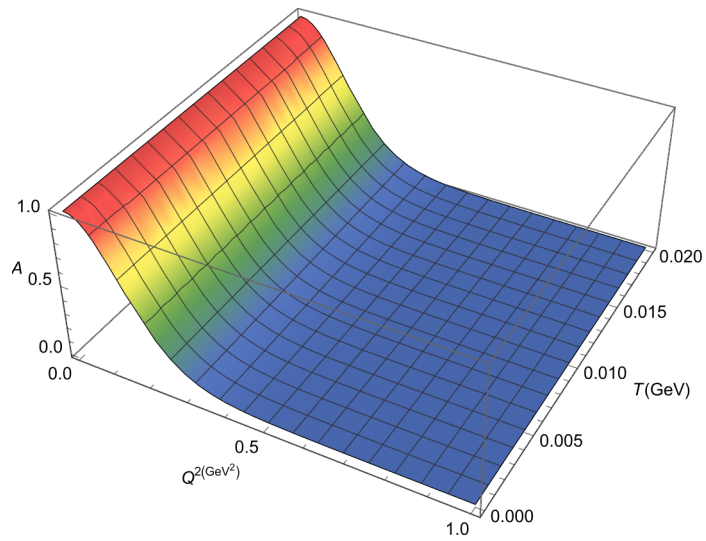
Out[9]=

$$\frac{15162.2 Q^2 (1 + 0.0710353 Q^2) \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]^2}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]^2}$$

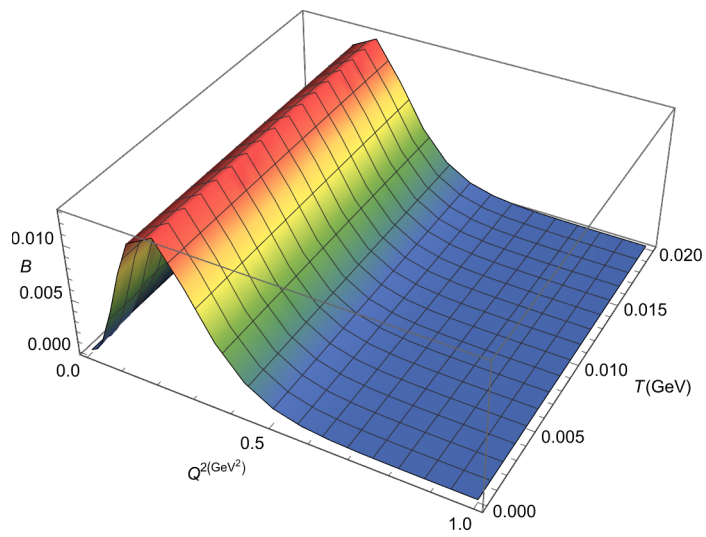
Out[10]=

$$\begin{aligned}
& \left(0.0473569 Q^2 \left(- \frac{80.4792 \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} + \right. \right. \\
& \quad \left. \left. \frac{2700.84 (1 + 0.0710353 Q^2) \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} \right) + \right. \\
& \quad \left. \frac{120 \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} \right)^2 + 0.00448535 Q^4 \left(- \frac{80.4792 \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} + \right. \\
& \quad \left. \frac{2700.84 (1 + 0.0710353 Q^2) \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]} \right)^2 + \\
& \quad \frac{7581.09 Q^2 \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]^2}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]^2} + \\
& \quad \frac{7433.87 Q^2 (1 + 0.0710353 Q^2) \operatorname{Gamma} \left[1 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]^2}{\operatorname{Gamma} \left[6 + \frac{6.92521 Q^2}{1-29.8186 T^2-2195.9 T^4} \right]^2}
\end{aligned}$$

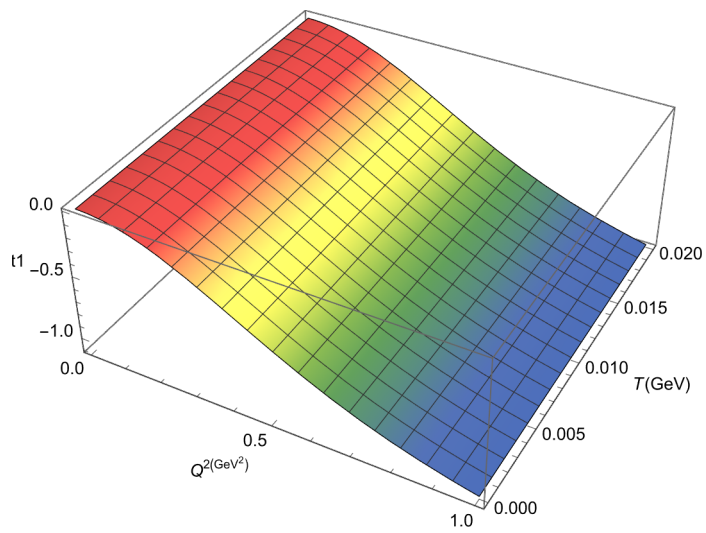
Out[]=



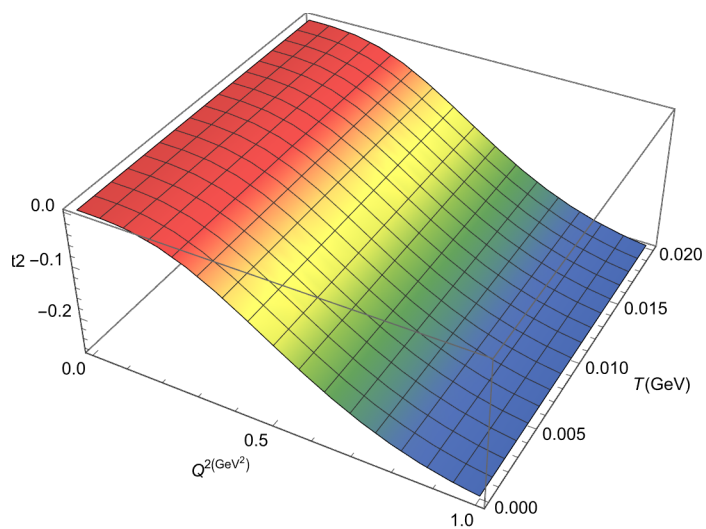
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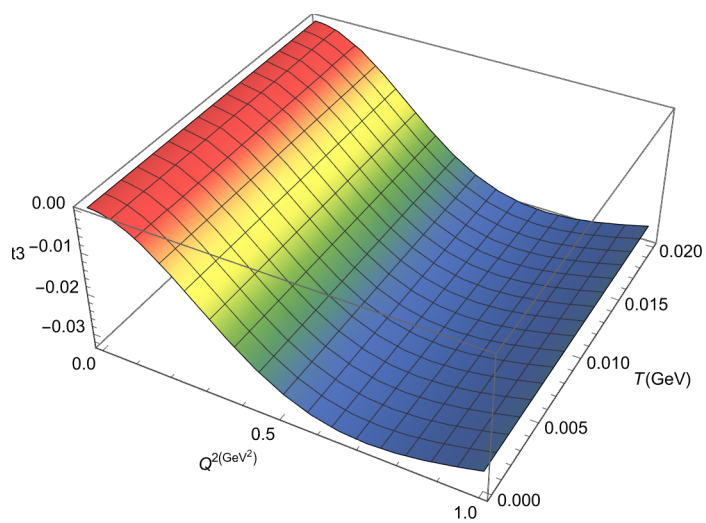
Out[]=



Out[8]=



Out[9]=



Out[10]=

