# Run Cross Section $\alpha_s$ (s), 2 Loops

In[1737]:=
```
g = 2;
α = 1 / 137;
Conversion = 389 379;
n = 3;
C_F = (n^2 - 1) / (2 n);
Born = (4 π α^2) / (3 s);
```

In[1743]:=
```
CrossBorn[s_] = Conversion * Born;
CrossBorn50sq = CrossBorn[50^2];
CrossBorn60sq = CrossBorn[60^2];
CrossBorn70sq = CrossBorn[70^2];
CrossBorn80sq = CrossBorn[80^2];
CrossBorn90sq = CrossBorn[90^2];
```

In[1749]:=
```
CrossBorn100sq = CrossBorn[100^2];
CrossBorn110sq = CrossBorn[110^2];
CrossBorn120sq = CrossBorn[120^2];
CrossBorn130sq = CrossBorn[130^2];
CrossBorn140sq = CrossBorn[140^2];
CrossBorn150sq = CrossBorn[150^2];
CrossBorn160sq = CrossBorn[160^2];
CrossBorn170sq = CrossBorn[170^2];
CrossBorn180sq = CrossBorn[180^2];
CrossBorn190sq = CrossBorn[190^2];
```

In[1759]:=
```
CrossBorn200sq = CrossBorn[200^2];
CrossBorn210sq = CrossBorn[210^2];
CrossBorn220sq = CrossBorn[220^2];
CrossBorn230sq = CrossBorn[230^2];
CrossBorn240sq = CrossBorn[240^2];
CrossBorn250sq = CrossBorn[250^2];
CrossBorn260sq = CrossBorn[260^2];
CrossBorn270sq = CrossBorn[270^2];
CrossBorn280sq = CrossBorn[280^2];
CrossBorn290sq = CrossBorn[290^2];
```

In[1769]:=
```
CrossBorn300sq = CrossBorn[300^2];
CrossBorn310sq = CrossBorn[310^2];
CrossBorn320sq = CrossBorn[320^2];
CrossBorn330sq = CrossBorn[330^2];
CrossBorn340sq = CrossBorn[340^2];
CrossBorn350sq = CrossBorn[350^2];
CrossBorn360sq = CrossBorn[360^2];
CrossBorn370sq = CrossBorn[370^2];
CrossBorn380sq = CrossBorn[380^2];
CrossBorn390sq = CrossBorn[390^2];
```

In[1779]:=
```
CrossBorn400sq = CrossBorn[400^2];
CrossBorn410sq = CrossBorn[410^2];
CrossBorn420sq = CrossBorn[420^2];
CrossBorn430sq = CrossBorn[430^2];
CrossBorn440sq = CrossBorn[440^2];
CrossBorn450sq = CrossBorn[450^2];
CrossBorn460sq = CrossBorn[460^2];
CrossBorn470sq = CrossBorn[470^2];
CrossBorn480sq = CrossBorn[480^2];
CrossBorn490sq = CrossBorn[490^2];
```

In[1789]:=
```
CrossBorn500sq = CrossBorn[500^2];
CrossBorn510sq = CrossBorn[510^2];
CrossBorn520sq = CrossBorn[520^2];
CrossBorn530sq = CrossBorn[530^2];
CrossBorn540sq = CrossBorn[540^2];
CrossBorn550sq = CrossBorn[550^2];
CrossBorn560sq = CrossBorn[560^2];
CrossBorn570sq = CrossBorn[570^2];
CrossBorn580sq = CrossBorn[580^2];
CrossBorn590sq = CrossBorn[590^2];
```

In[1799]:=
```
CrossBorn600sq = CrossBorn[600^2];
CrossBorn610sq = CrossBorn[610^2];
CrossBorn620sq = CrossBorn[620^2];
CrossBorn630sq = CrossBorn[630^2];
CrossBorn640sq = CrossBorn[640^2];
CrossBorn650sq = CrossBorn[650^2];
CrossBorn660sq = CrossBorn[660^2];
CrossBorn670sq = CrossBorn[670^2];
CrossBorn680sq = CrossBorn[680^2];
CrossBorn690sq = CrossBorn[690^2];
```

In[1809]:=
```
CrossBorn700sq = CrossBorn[700^2];
CrossBorn710sq = CrossBorn[710^2];
CrossBorn720sq = CrossBorn[720^2];
CrossBorn730sq = CrossBorn[730^2];
CrossBorn740sq = CrossBorn[740^2];
CrossBorn750sq = CrossBorn[750^2];
CrossBorn760sq = CrossBorn[760^2];
CrossBorn770sq = CrossBorn[770^2];
CrossBorn780sq = CrossBorn[780^2];
CrossBorn790sq = CrossBorn[790^2];
```

In[1819]:=
```
CrossBorn800sq = CrossBorn[800^2];
CrossBorn810sq = CrossBorn[810^2];
CrossBorn820sq = CrossBorn[820^2];
CrossBorn830sq = CrossBorn[830^2];
CrossBorn840sq = CrossBorn[840^2];
CrossBorn850sq = CrossBorn[850^2];
CrossBorn860sq = CrossBorn[860^2];
CrossBorn870sq = CrossBorn[870^2];
CrossBorn880sq = CrossBorn[880^2];
CrossBorn890sq = CrossBorn[890^2];
```

In[1829]:=
```
CrossBorn900sq = CrossBorn[900^2];
CrossBorn910sq = CrossBorn[910^2];
CrossBorn920sq = CrossBorn[920^2];
CrossBorn930sq = CrossBorn[930^2];
CrossBorn940sq = CrossBorn[940^2];
CrossBorn950sq = CrossBorn[950^2];
CrossBorn960sq = CrossBorn[960^2];
CrossBorn970sq = CrossBorn[970^2];
CrossBorn980sq = CrossBorn[980^2];
CrossBorn990sq = CrossBorn[990^2];
CrossBorn1000sq = CrossBorn[1000^2];
```

In[1840]:=
```
As50sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 50^2, g];
As60sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 60^2, g];
As70sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 70^2, g];
As80sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 80^2, g];
As90sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 90^2, g];
```

In[1845]:=
```
As100sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 100^2, g];
As110sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 110^2, g];
As120sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 120^2, g];
As130sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 130^2, g];
As140sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 140^2, g];
As150sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 150^2, g];
As160sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 160^2, g];
As170sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 170^2, g];
As180sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 180^2, g];
As190sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 190^2, g];
```

In[1855]:=
```
As200sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 200^2, g];
As210sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 210^2, g];
As220sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 220^2, g];
As230sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 230^2, g];
As240sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 240^2, g];
As250sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 250^2, g];
As260sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 260^2, g];
As270sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 270^2, g];
As280sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 280^2, g];
As290sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 290^2, g];
```

In[1865]:=
```
As300sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 300^2, g];
As310sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 310^2, g];
As320sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 320^2, g];
As330sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 330^2, g];
As340sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 340^2, g];
As350sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 350^2, g];
As360sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 360^2, g];
As370sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 370^2, g];
As380sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 380^2, g];
As390sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 390^2, g];
```

In[1875]:=
```
As400sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 400^2, g];
As410sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 410^2, g];
As420sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 420^2, g];
As430sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 430^2, g];
As440sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 440^2, g];
As450sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 450^2, g];
As460sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 460^2, g];
As470sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 470^2, g];
As480sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 480^2, g];
As490sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 490^2, g];
```

In[1885]:=
```
As500sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 500^2, g];
As510sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 510^2, g];
As520sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 520^2, g];
As530sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 530^2, g];
As540sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 540^2, g];
As550sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 550^2, g];
As560sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 560^2, g];
As570sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 570^2, g];
As580sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 580^2, g];
As590sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 590^2, g];
```

In[1895]:=
```
As600sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 600^2, g];
As610sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 610^2, g];
As620sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 620^2, g];
As630sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 630^2, g];
As640sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 640^2, g];
As650sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 650^2, g];
As660sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 660^2, g];
As670sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 670^2, g];
As680sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 680^2, g];
As690sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 690^2, g];
```

In[1905]:=
```
As700sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 700^2, g];
As710sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 710^2, g];
As720sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 720^2, g];
As730sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 730^2, g];
As740sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 740^2, g];
As750sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 750^2, g];
As760sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 760^2, g];
As770sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 770^2, g];
As780sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 780^2, g];
As790sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 790^2, g];
```

In[1915]:=
```
As800sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 800^2, g];
As810sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 810^2, g];
As820sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 820^2, g];
As830sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 830^2, g];
As840sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 840^2, g];
As850sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 850^2, g];
As860sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 860^2, g];
As870sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 870^2, g];
As880sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 880^2, g];
As890sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 890^2, g];
```

In[1925]:=
```
As900sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 900^2, g];
As910sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 910^2, g];
As920sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 920^2, g];
As930sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 930^2, g];
As940sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 940^2, g];
As950sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 950^2, g];
As960sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 960^2, g];
As970sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 970^2, g];
As980sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 980^2, g];
As990sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 990^2, g];
As1000sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 1000^2, g];
```

In[1936]:=
$$\text{Correction50sq} = \left(1 + \frac{3\,\text{As50sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction60sq} = \left(1 + \frac{3\,\text{As60sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction70sq} = \left(1 + \frac{3\,\text{As70sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction80sq} = \left(1 + \frac{3\,\text{As80sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction90sq} = \left(1 + \frac{3\,\text{As90sq}}{4\,\pi}\,C_F\right);$$

In[1941]:=
$$\text{Correction100sq} = \left(1 + \frac{3\,\text{As100sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction110sq} = \left(1 + \frac{3\,\text{As110sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction120sq} = \left(1 + \frac{3\,\text{As120sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction130sq} = \left(1 + \frac{3\,\text{As130sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction140sq} = \left(1 + \frac{3\,\text{As140sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction150sq} = \left(1 + \frac{3\,\text{As150sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction160sq} = \left(1 + \frac{3\,\text{As160sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction170sq} = \left(1 + \frac{3\,\text{As170sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction180sq} = \left(1 + \frac{3\,\text{As180sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction190sq} = \left(1 + \frac{3\,\text{As190sq}}{4\,\pi}\,C_F\right);$$

In[1951]:=
$$\text{Correction200sq} = \left(1 + \frac{3\,\text{As200sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction210sq} = \left(1 + \frac{3\,\text{As210sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction220sq} = \left(1 + \frac{3\,\text{As220sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction230sq} = \left(1 + \frac{3\,\text{As230sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction240sq} = \left(1 + \frac{3\,\text{As240sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction250sq} = \left(1 + \frac{3\,\text{As250sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction260sq} = \left(1 + \frac{3\,\text{As260sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction270sq} = \left(1 + \frac{3\,\text{As270sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction280sq} = \left(1 + \frac{3\,\text{As280sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction290sq} = \left(1 + \frac{3\,\text{As290sq}}{4\,\pi}\,C_F\right);$$

In[1961]:=
$$\text{Correction300sq} = \left(1 + \frac{3\,\text{As300sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction310sq} = \left(1 + \frac{3\,\text{As310sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction320sq} = \left(1 + \frac{3\,\text{As320sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction330sq} = \left(1 + \frac{3\,\text{As330sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction340sq} = \left(1 + \frac{3\,\text{As340sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction350sq} = \left(1 + \frac{3\,\text{As350sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction360sq} = \left(1 + \frac{3\,\text{As360sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction370sq} = \left(1 + \frac{3\,\text{As370sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction380sq} = \left(1 + \frac{3\,\text{As380sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction390sq} = \left(1 + \frac{3\,\text{As390sq}}{4\,\pi}\,C_F\right);$$

In[1971]:=
$$\text{Correction400sq} = \left(1 + \frac{3\,\text{As400sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction410sq} = \left(1 + \frac{3\,\text{As410sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction420sq} = \left(1 + \frac{3\,\text{As420sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction430sq} = \left(1 + \frac{3\,\text{As430sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction440sq} = \left(1 + \frac{3\,\text{As440sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction450sq} = \left(1 + \frac{3\,\text{As450sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction460sq} = \left(1 + \frac{3\,\text{As460sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction470sq} = \left(1 + \frac{3\,\text{As470sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction480sq} = \left(1 + \frac{3\,\text{As480sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction490sq} = \left(1 + \frac{3\,\text{As490sq}}{4\,\pi}\,C_F\right);$$

In[1981]:=
$$\text{Correction500sq} = \left(1 + \frac{3\,\text{As500sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction510sq} = \left(1 + \frac{3\,\text{As510sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction520sq} = \left(1 + \frac{3\,\text{As520sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction530sq} = \left(1 + \frac{3\,\text{As530sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction540sq} = \left(1 + \frac{3\,\text{As540sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction550sq} = \left(1 + \frac{3\,\text{As550sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction560sq} = \left(1 + \frac{3\,\text{As560sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction570sq} = \left(1 + \frac{3\,\text{As570sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction580sq} = \left(1 + \frac{3\,\text{As580sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction590sq} = \left(1 + \frac{3\,\text{As590sq}}{4\,\pi}\,C_F\right);$$

In[1991]:=
$$\text{Correction600sq} = \left(1 + \frac{3\,\text{As600sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction610sq} = \left(1 + \frac{3\,\text{As610sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction620sq} = \left(1 + \frac{3\,\text{As620sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction630sq} = \left(1 + \frac{3\,\text{As630sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction640sq} = \left(1 + \frac{3\,\text{As640sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction650sq} = \left(1 + \frac{3\,\text{As650sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction660sq} = \left(1 + \frac{3\,\text{As660sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction670sq} = \left(1 + \frac{3\,\text{As670sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction680sq} = \left(1 + \frac{3\,\text{As680sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction690sq} = \left(1 + \frac{3\,\text{As690sq}}{4\,\pi}\,C_F\right);$$

In[2001]:=
$$\text{Correction700sq} = \left(1 + \frac{3\,\text{As700sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction710sq} = \left(1 + \frac{3\,\text{As710sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction720sq} = \left(1 + \frac{3\,\text{As720sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction730sq} = \left(1 + \frac{3\,\text{As730sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction740sq} = \left(1 + \frac{3\,\text{As740sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction750sq} = \left(1 + \frac{3\,\text{As750sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction760sq} = \left(1 + \frac{3\,\text{As760sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction770sq} = \left(1 + \frac{3\,\text{As770sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction780sq} = \left(1 + \frac{3\,\text{As780sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction790sq} = \left(1 + \frac{3\,\text{As790sq}}{4\,\pi}\,C_F\right);$$

In[2011]:=
$$\text{Correction800sq} = \left(1 + \frac{3\,\text{As800sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction810sq} = \left(1 + \frac{3\,\text{As810sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction820sq} = \left(1 + \frac{3\,\text{As820sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction830sq} = \left(1 + \frac{3\,\text{As830sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction840sq} = \left(1 + \frac{3\,\text{As840sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction850sq} = \left(1 + \frac{3\,\text{As850sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction860sq} = \left(1 + \frac{3\,\text{As860sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction870sq} = \left(1 + \frac{3\,\text{As870sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction880sq} = \left(1 + \frac{3\,\text{As880sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction890sq} = \left(1 + \frac{3\,\text{As890sq}}{4\,\pi}\,C_F\right);$$

In[2021]:=
$$\text{Correction900sq} = \left(1 + \frac{3\,\text{As900sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction910sq} = \left(1 + \frac{3\,\text{As910sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction920sq} = \left(1 + \frac{3\,\text{As920sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction930sq} = \left(1 + \frac{3\,\text{As930sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction940sq} = \left(1 + \frac{3\,\text{As940sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction950sq} = \left(1 + \frac{3\,\text{As950sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction960sq} = \left(1 + \frac{3\,\text{As960sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction970sq} = \left(1 + \frac{3\,\text{As970sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction980sq} = \left(1 + \frac{3\,\text{As980sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction990sq} = \left(1 + \frac{3\,\text{As990sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction1000sq} = \left(1 + \frac{3\,\text{As1000sq}}{4\,\pi}\,C_F\right);$$

In[2032]:=
```
PlotCross50sq = CrossBorn50sq * Correction50sq;
PlotCross60sq = CrossBorn60sq * Correction60sq;
PlotCross70sq = CrossBorn70sq * Correction70sq;
PlotCross80sq = CrossBorn80sq * Correction80sq;
PlotCross90sq = CrossBorn90sq * Correction90sq;
```

In[2037]:=
```
PlotCross100sq = CrossBorn100sq * Correction100sq;
PlotCross110sq = CrossBorn110sq * Correction110sq;
PlotCross120sq = CrossBorn120sq * Correction120sq;
PlotCross130sq = CrossBorn130sq * Correction130sq;
PlotCross140sq = CrossBorn140sq * Correction140sq;
PlotCross150sq = CrossBorn150sq * Correction150sq;
PlotCross160sq = CrossBorn160sq * Correction160sq;
PlotCross170sq = CrossBorn170sq * Correction170sq;
PlotCross180sq = CrossBorn180sq * Correction180sq;
PlotCross190sq = CrossBorn190sq * Correction190sq;
```

In[2047]:=
```
PlotCross200sq = CrossBorn200sq * Correction200sq;
PlotCross210sq = CrossBorn210sq * Correction210sq;
PlotCross220sq = CrossBorn220sq * Correction220sq;
PlotCross230sq = CrossBorn230sq * Correction230sq;
PlotCross240sq = CrossBorn240sq * Correction240sq;
PlotCross250sq = CrossBorn250sq * Correction250sq;
PlotCross260sq = CrossBorn260sq * Correction260sq;
PlotCross270sq = CrossBorn270sq * Correction270sq;
PlotCross280sq = CrossBorn280sq * Correction280sq;
PlotCross290sq = CrossBorn290sq * Correction290sq;
```

In[2057]:=
```
PlotCross300sq = CrossBorn300sq * Correction300sq;
PlotCross310sq = CrossBorn310sq * Correction310sq;
PlotCross320sq = CrossBorn320sq * Correction320sq;
PlotCross330sq = CrossBorn330sq * Correction330sq;
PlotCross340sq = CrossBorn340sq * Correction340sq;
PlotCross350sq = CrossBorn350sq * Correction350sq;
PlotCross360sq = CrossBorn360sq * Correction360sq;
PlotCross370sq = CrossBorn370sq * Correction370sq;
PlotCross380sq = CrossBorn380sq * Correction380sq;
PlotCross390sq = CrossBorn390sq * Correction390sq;
```

In[2067]:=
```
PlotCross400sq = CrossBorn400sq * Correction400sq;
PlotCross410sq = CrossBorn410sq * Correction410sq;
PlotCross420sq = CrossBorn420sq * Correction420sq;
PlotCross430sq = CrossBorn430sq * Correction430sq;
PlotCross440sq = CrossBorn440sq * Correction440sq;
PlotCross450sq = CrossBorn450sq * Correction450sq;
PlotCross460sq = CrossBorn460sq * Correction460sq;
PlotCross470sq = CrossBorn470sq * Correction470sq;
PlotCross480sq = CrossBorn480sq * Correction480sq;
PlotCross490sq = CrossBorn490sq * Correction490sq;
```

In[2077]:=
```
PlotCross500sq = CrossBorn500sq * Correction500sq;
PlotCross510sq = CrossBorn510sq * Correction510sq;
PlotCross520sq = CrossBorn520sq * Correction520sq;
PlotCross530sq = CrossBorn530sq * Correction530sq;
PlotCross540sq = CrossBorn540sq * Correction540sq;
PlotCross550sq = CrossBorn550sq * Correction550sq;
PlotCross560sq = CrossBorn560sq * Correction560sq;
PlotCross570sq = CrossBorn570sq * Correction570sq;
PlotCross580sq = CrossBorn580sq * Correction580sq;
PlotCross590sq = CrossBorn590sq * Correction590sq;
```

In[2087]:=
```
PlotCross600sq = CrossBorn600sq * Correction600sq;
PlotCross610sq = CrossBorn610sq * Correction610sq;
PlotCross620sq = CrossBorn620sq * Correction620sq;
PlotCross630sq = CrossBorn630sq * Correction630sq;
PlotCross640sq = CrossBorn640sq * Correction640sq;
PlotCross650sq = CrossBorn650sq * Correction650sq;
PlotCross660sq = CrossBorn660sq * Correction660sq;
PlotCross670sq = CrossBorn670sq * Correction670sq;
PlotCross680sq = CrossBorn680sq * Correction680sq;
PlotCross690sq = CrossBorn690sq * Correction690sq;
```

In[2097]:=
```
PlotCross700sq = CrossBorn700sq * Correction700sq;
PlotCross710sq = CrossBorn710sq * Correction710sq;
PlotCross720sq = CrossBorn720sq * Correction720sq;
PlotCross730sq = CrossBorn730sq * Correction730sq;
PlotCross740sq = CrossBorn740sq * Correction740sq;
PlotCross750sq = CrossBorn750sq * Correction750sq;
PlotCross760sq = CrossBorn760sq * Correction760sq;
PlotCross770sq = CrossBorn770sq * Correction770sq;
PlotCross780sq = CrossBorn780sq * Correction780sq;
PlotCross790sq = CrossBorn790sq * Correction790sq;
```

In[2107]:=
```
PlotCross800sq = CrossBorn800sq * Correction800sq;
PlotCross810sq = CrossBorn810sq * Correction810sq;
PlotCross820sq = CrossBorn820sq * Correction820sq;
PlotCross830sq = CrossBorn830sq * Correction830sq;
PlotCross840sq = CrossBorn840sq * Correction840sq;
PlotCross850sq = CrossBorn850sq * Correction850sq;
PlotCross860sq = CrossBorn860sq * Correction860sq;
PlotCross870sq = CrossBorn870sq * Correction870sq;
PlotCross880sq = CrossBorn880sq * Correction880sq;
PlotCross890sq = CrossBorn890sq * Correction890sq;
```

In[2117]:=
```
PlotCross900sq = CrossBorn900sq * Correction900sq;
PlotCross910sq = CrossBorn910sq * Correction910sq;
PlotCross920sq = CrossBorn920sq * Correction920sq;
PlotCross930sq = CrossBorn930sq * Correction930sq;
PlotCross940sq = CrossBorn940sq * Correction940sq;
PlotCross950sq = CrossBorn950sq * Correction950sq;
PlotCross960sq = CrossBorn960sq * Correction960sq;
PlotCross970sq = CrossBorn970sq * Correction970sq;
PlotCross980sq = CrossBorn980sq * Correction980sq;
PlotCross990sq = CrossBorn990sq * Correction990sq;
PlotCross1000sq = CrossBorn1000sq * Correction1000sq;
```

# Plot Cross Section $\alpha_s$ (s), 2 Loops

In[2128]:=

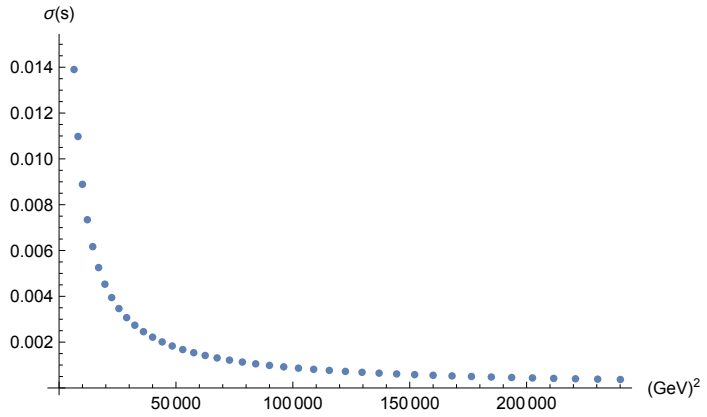
```
Table1 = TableForm[{{50^2, PlotCross50sq}, {60^2, PlotCross60sq}, {70^2, PlotCross70sq},
   {80^2, PlotCross80sq}, {90^2, PlotCross90sq}, {100^2, PlotCross100sq},
   {110^2, PlotCross110sq}, {120^2, PlotCross120sq}, {130^2, PlotCross130sq},
   {140^2, PlotCross140sq}, {150^2, PlotCross150sq}, {160^2, PlotCross160sq},
   {170^2, PlotCross170sq}, {180^2, PlotCross180sq}, {190^2, PlotCross190sq},
   {200^2, PlotCross200sq}, {210^2, PlotCross210sq}, {220^2, PlotCross220sq},
   {230^2, PlotCross230sq}, {240^2, PlotCross240sq}, {250^2, PlotCross250sq},
   {260^2, PlotCross260sq}, {270^2, PlotCross270sq}, {280^2, PlotCross280sq},
   {290^2, PlotCross290sq}, {300^2, PlotCross300sq}, {310^2, PlotCross310sq},
   {320^2, PlotCross320sq}, {330^2, PlotCross330sq}, {340^2, PlotCross340sq},
   {350^2, PlotCross350sq}, {360^2, PlotCross360sq}, {370^2, PlotCross370sq},
   {380^2, PlotCross380sq}, {390^2, PlotCross390sq}, {400^2, PlotCross400sq},
   {410^2, PlotCross410sq}, {420^2, PlotCross420sq}, {430^2, PlotCross430sq},
   {440^2, PlotCross440sq}, {450^2, PlotCross450sq}, {460^2, PlotCross460sq},
   {470^2, PlotCross470sq}, {480^2, PlotCross480sq}, {490^2, PlotCross490sq}},
  TableHeadings → {None, {"(GeV)^2", "σ(s)"}}]
```

Out[2128]//TableForm=

| $(\text{GeV})^2$ | $\sigma(s)$ |
|---|---|
| 2500 | 0.03565653548514648880695 |
| 3600 | 0.02474119068343484478141 |
| 4900 | 0.01816534202561793174945 |
| 6400 | 0.01390036324118763235666 |
| 8100 | 0.01097801251256019782107 |
| 10 000 | 0.008888707452696050772 81 |
| 12 100 | 0.00734352047954567084093 |
| 14 400 | 0.00616872137529201211145 |
| 16 900 | 0.00525475726032605392609 |
| 19 600 | 0.00452977249507641413524 3 |
| 22 500 | 0.00394505079922366869415 0 |
| 25 600 | 0.00346661758518692446392 9 |
| 28 900 | 0.00307019405403295762402 2 |
| 32 400 | 0.00273805701393946745087 6 |
| 36 100 | 0.00245702415385334444914 3 |
| 40 000 | 0.00221712633345470734427 2 |
| 44 100 | 0.00201071164205388193387 9 |
| 48 400 | 0.00183182791135209281490 0 |
| 52 900 | 0.00167578899891074197445 4 |
| 57 600 | 0.00153886489647564114671 8 |
| 62 500 | 0.00141805685078914771568 2 |
| 67 600 | 0.00131093185286818919048 7 |
| 72 900 | 0.00121549923683013554876 9 |
| 78 400 | 0.00113011757520406390233 9 |
| 84 100 | 0.00105342365909927093689 9 |
| 90 000 | 0.00098427777317792793450 6 |
| 96 100 | 0.00092172112875019580533 2 |
| 102 400 | 0.00086494246327995119407 7 |
| 108 900 | 0.00081325161797563624924 9 |
| 115 600 | 0.00076605847578334214764 2 |
| 122 500 | 0.00072285605207314460612 8 |
| 129 600 | 0.00068320682800956190343 8 |
| 136 900 | 0.00064673163494041065397 2 |
| 144 400 | 0.00061310055978848495147 1 |
| 152 100 | 0.00058202546216900487485 2 |
| 160 000 | 0.00055325378489040546309 9 |
| 168 100 | 0.00052656340852397830390 38 |
| 176 400 | 0.00050175835351740226836 82 |
| 184 900 | 0.00047866517398346455676 76 |
| 193 600 | 0.00045712991881678387443 13 |
| 202 500 | 0.00043701556038602452425 66 |
| 211 600 | 0.00041819981035522203662 06 |
| 220 900 | 0.00040057325742993171080 61 |
| 230 400 | 0.00038403777392356211918 43 |
| 240 100 | 0.00036850514769469365222 07 |

In[2129]:=
```
Plot1 = ListPlot[%, AxesLabel → {"(GeV)^2", "σ(s)"}]
```

Out[2129]=



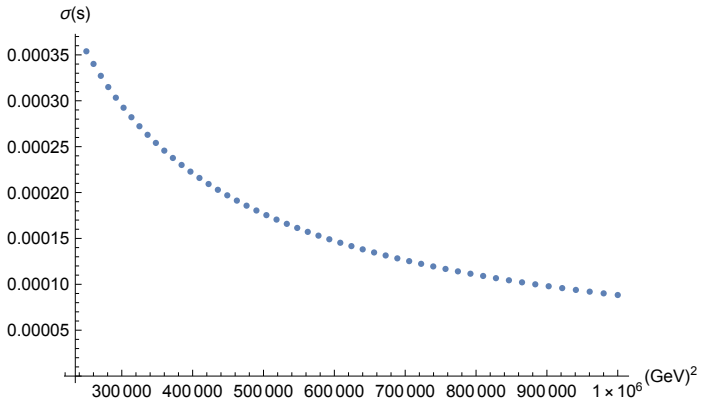

In[2130]:=
```
Table2 =
 TableForm[{{500^2, PlotCross500sq}, {510^2, PlotCross510sq}, {520^2, PlotCross520sq},
   {530^2, PlotCross530sq}, {540^2, PlotCross540sq}, {550^2, PlotCross550sq},
   {560^2, PlotCross560sq}, {570^2, PlotCross570sq}, {580^2, PlotCross580sq},
   {590^2, PlotCross590sq}, {600^2, PlotCross600sq}, {610^2, PlotCross610sq},
   {620^2, PlotCross620sq}, {630^2, PlotCross630sq}, {640^2, PlotCross640sq},
   {650^2, PlotCross650sq}, {660^2, PlotCross660sq}, {670^2, PlotCross670sq},
   {680^2, PlotCross680sq}, {690^2, PlotCross690sq}, {700^2, PlotCross700sq},
   {710^2, PlotCross710sq}, {720^2, PlotCross720sq}, {730^2, PlotCross730sq},
   {740^2, PlotCross740sq}, {750^2, PlotCross750sq}, {760^2, PlotCross760sq},
   {770^2, PlotCross770sq}, {780^2, PlotCross780sq}, {790^2, PlotCross790sq},
   {800^2, PlotCross800sq}, {810^2, PlotCross810sq}, {820^2, PlotCross820sq},
   {830^2, PlotCross830sq}, {840^2, PlotCross840sq}, {850^2, PlotCross850sq},
   {860^2, PlotCross860sq}, {870^2, PlotCross870sq}, {880^2, PlotCross880sq},
   {890^2, PlotCross890sq}, {900^2, PlotCross900sq}, {910^2, PlotCross910sq},
   {920^2, PlotCross920sq}, {930^2, PlotCross930sq}, {940^2, PlotCross940sq},
   {950^2, PlotCross950sq}, {960^2, PlotCross960sq}, {970^2, PlotCross970sq},
   {980^2, PlotCross980sq}, {990^2, PlotCross990sq}, {1000^2, PlotCross1000sq}},
  TableHeadings → {None, {"(GeV)^2", "σ(s)"}}]
```

Out[2130]//TableForm=

| $(\text{GeV})^2$ | $\sigma(s)$ |
|---|---|
| 250 000 | 0.000353895903749747724729 2 |
| 260 100 | 0.000340138286045387346514 2 |
| 270 400 | 0.000327167375076495920676 9 |
| 280 900 | 0.000314924320942857720286 7 |
| 291 600 | 0.000303355674941308657596 8 |
| 302 500 | 0.000292412805479502968758 6 |
| 313 600 | 0.000282051386370190791060 7 |
| 324 900 | 0.000272230947434116090385 5 |
| 336 400 | 0.000262914478889321069682 0 |
| 348 100 | 0.000254068082293856138470 7 |
| 360 000 | 0.000245660661885001954713 8 |
| 372 100 | 0.000237663651059228044360 8 |
| 384 400 | 0.000230050769494041289461 4 |
| 396 900 | 0.000222797807050594652703 8 |
| 409 600 | 0.000215882431134764014234 2 |
| 422 500 | 0.000209284014650965512904 5 |
| 435 600 | 0.000202983482070886618892 3 |
| 448 900 | 0.000196963171469732433759 7 |
| 462 400 | 0.000191206710664773621772 9 |
| 476 100 | 0.000185698905832560333232 3 |
| 490 000 | 0.000180425641188474040502 9 |
| 504 100 | 0.000175373788490598820384 2 |
| 518 400 | 0.000170531125283605658188 2 |
| 532 900 | 0.000165886260931139385580 7 |
| 547 600 | 0.000161428569600166347887 5 |
| 562 500 | 0.000157148129460479614114 3 |
| 577 600 | 0.000153035667449257697827 6 |
| 592 900 | 0.000149082509026083075363 4 |
| 608 400 | 0.000145280532409716607563 6 |
| 624 100 | 0.000141622126845524438600 3 |
| 640 000 | 0.000138100154502897890974 7 |
| 656 100 | 0.000134707915646260401087 2 |
| 672 400 | 0.000131439116762144155952 1 |
| 688 900 | 0.000128287841359049516066 1 |
| 705 600 | 0.000125248523186979198785 1 |
| 722 500 | 0.000122315921650187711216 2 |
| 739 600 | 0.000119485099210253811633 5 |
| 756 900 | 0.000116751400597457116631 8 |
| 774 400 | 0.000114110433666954363775 0 |
| 792 100 | 0.000111558051752696207239 5 |
| 810 000 | 0.000109090337386653284832 5 |
| 828 100 | 0.000106703587263949165250 3 |
| 846 400 | 0.000104394298346117905806 4 |
| 864 900 | 0.000102159155005081019838 6 |
| 883 600 | 0.000099995017119717428717 6 |
| 902 500 | 0.000097898909045206914609 7 |
| 921 600 | 0.000095868009382773628053 3 |
| 940 900 | 0.000093899641484138318375 5 |
| 960 400 | 0.000091991264630991598209 1 |
| 980 100 | 0.000090140465835200656649 7 |
| 1 000 000 | 0.000088344952210324557909 1 |

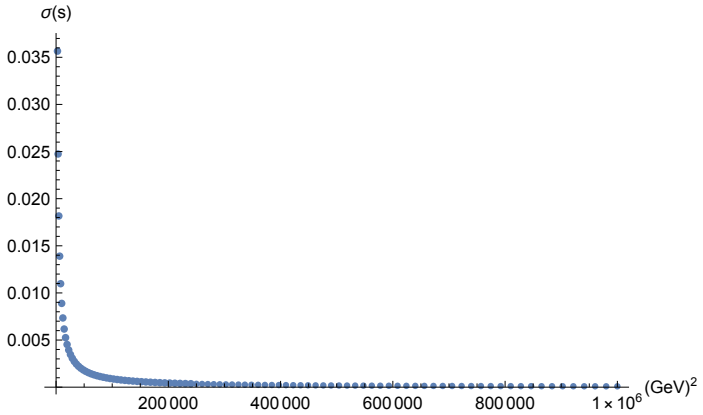
In[2131]:=
```
Plot2 = ListPlot[%, AxesLabel → {"(GeV)^2", "σ(s)"}]
```

Out[2131]=



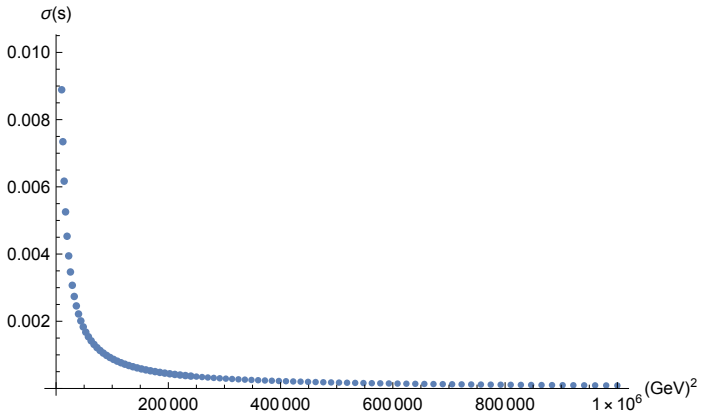

In[2132]:=
```
Show[{Plot1, Plot2}, PlotRange → All]
```

Out[2132]=



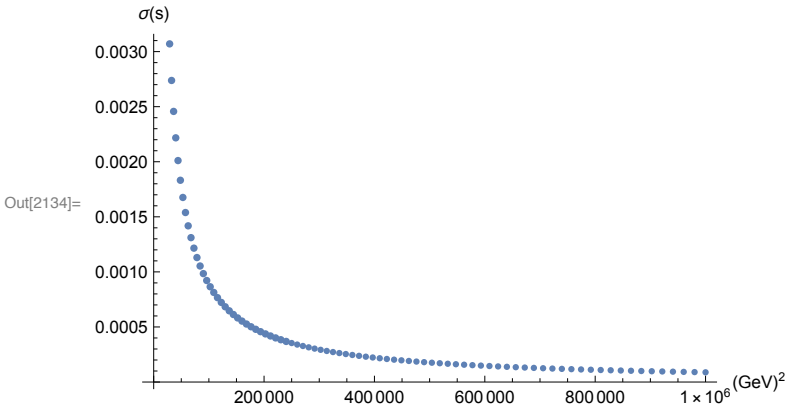

In[2133]:=
```
Show[{Plot1, Plot2}, PlotRange → {{0, 1000^2}, {0, 0.01}}]
```

Out[2133]=



In[2134]:=
```
PlotCross2Loop = Show[{Plot1, Plot2}, PlotRange → {{0, 1000^2}, {0, 0.003}}]
```

Out[2134]=




# Run Cross Section $\alpha_s$ (s), 3 Loops

In[2135]:=
```
g = 3;
α = 1 / 137;
Conversion = 389 379;
n = 3;
C_F = (n^2 - 1) / (2 n);
Born = 4 π α^2 / (3 s);
```

In[2141]:=
```
CrossBorn[s_] = Conversion * Born;
CrossBorn50sq = CrossBorn[50^2];
CrossBorn60sq = CrossBorn[60^2];
CrossBorn70sq = CrossBorn[70^2];
CrossBorn80sq = CrossBorn[80^2];
CrossBorn90sq = CrossBorn[90^2];
```

In[2147]:=
```
CrossBorn100sq = CrossBorn[100^2];
CrossBorn110sq = CrossBorn[110^2];
CrossBorn120sq = CrossBorn[120^2];
CrossBorn130sq = CrossBorn[130^2];
CrossBorn140sq = CrossBorn[140^2];
CrossBorn150sq = CrossBorn[150^2];
CrossBorn160sq = CrossBorn[160^2];
CrossBorn170sq = CrossBorn[170^2];
CrossBorn180sq = CrossBorn[180^2];
CrossBorn190sq = CrossBorn[190^2];
```

In[2157]:=
```
CrossBorn200sq = CrossBorn[200^2];
CrossBorn210sq = CrossBorn[210^2];
CrossBorn220sq = CrossBorn[220^2];
CrossBorn230sq = CrossBorn[230^2];
CrossBorn240sq = CrossBorn[240^2];
CrossBorn250sq = CrossBorn[250^2];
CrossBorn260sq = CrossBorn[260^2];
CrossBorn270sq = CrossBorn[270^2];
CrossBorn280sq = CrossBorn[280^2];
CrossBorn290sq = CrossBorn[290^2];
```

In[2167]:=
```
CrossBorn300sq = CrossBorn[300^2];
CrossBorn310sq = CrossBorn[310^2];
CrossBorn320sq = CrossBorn[320^2];
CrossBorn330sq = CrossBorn[330^2];
CrossBorn340sq = CrossBorn[340^2];
CrossBorn350sq = CrossBorn[350^2];
CrossBorn360sq = CrossBorn[360^2];
CrossBorn370sq = CrossBorn[370^2];
CrossBorn380sq = CrossBorn[380^2];
CrossBorn390sq = CrossBorn[390^2];
```

In[2177]:=
```
CrossBorn400sq = CrossBorn[400^2];
CrossBorn410sq = CrossBorn[410^2];
CrossBorn420sq = CrossBorn[420^2];
CrossBorn430sq = CrossBorn[430^2];
CrossBorn440sq = CrossBorn[440^2];
CrossBorn450sq = CrossBorn[450^2];
CrossBorn460sq = CrossBorn[460^2];
CrossBorn470sq = CrossBorn[470^2];
CrossBorn480sq = CrossBorn[480^2];
CrossBorn490sq = CrossBorn[490^2];
```

In[2187]:=
```
CrossBorn500sq = CrossBorn[500^2];
CrossBorn510sq = CrossBorn[510^2];
CrossBorn520sq = CrossBorn[520^2];
CrossBorn530sq = CrossBorn[530^2];
CrossBorn540sq = CrossBorn[540^2];
CrossBorn550sq = CrossBorn[550^2];
CrossBorn560sq = CrossBorn[560^2];
CrossBorn570sq = CrossBorn[570^2];
CrossBorn580sq = CrossBorn[580^2];
CrossBorn590sq = CrossBorn[590^2];
```

In[2197]:=
```
CrossBorn600sq = CrossBorn[600^2];
CrossBorn610sq = CrossBorn[610^2];
CrossBorn620sq = CrossBorn[620^2];
CrossBorn630sq = CrossBorn[630^2];
CrossBorn640sq = CrossBorn[640^2];
CrossBorn650sq = CrossBorn[650^2];
CrossBorn660sq = CrossBorn[660^2];
CrossBorn670sq = CrossBorn[670^2];
CrossBorn680sq = CrossBorn[680^2];
CrossBorn690sq = CrossBorn[690^2];
```

In[2207]:=
```
CrossBorn700sq = CrossBorn[700^2];
CrossBorn710sq = CrossBorn[710^2];
CrossBorn720sq = CrossBorn[720^2];
CrossBorn730sq = CrossBorn[730^2];
CrossBorn740sq = CrossBorn[740^2];
CrossBorn750sq = CrossBorn[750^2];
CrossBorn760sq = CrossBorn[760^2];
CrossBorn770sq = CrossBorn[770^2];
CrossBorn780sq = CrossBorn[780^2];
CrossBorn790sq = CrossBorn[790^2];
```

In[2217]:=
```
CrossBorn800sq = CrossBorn[800^2];
CrossBorn810sq = CrossBorn[810^2];
CrossBorn820sq = CrossBorn[820^2];
CrossBorn830sq = CrossBorn[830^2];
CrossBorn840sq = CrossBorn[840^2];
CrossBorn850sq = CrossBorn[850^2];
CrossBorn860sq = CrossBorn[860^2];
CrossBorn870sq = CrossBorn[870^2];
CrossBorn880sq = CrossBorn[880^2];
CrossBorn890sq = CrossBorn[890^2];
```

In[2227]:=
```
CrossBorn900sq = CrossBorn[900^2];
CrossBorn910sq = CrossBorn[910^2];
CrossBorn920sq = CrossBorn[920^2];
CrossBorn930sq = CrossBorn[930^2];
CrossBorn940sq = CrossBorn[940^2];
CrossBorn950sq = CrossBorn[950^2];
CrossBorn960sq = CrossBorn[960^2];
CrossBorn970sq = CrossBorn[970^2];
CrossBorn980sq = CrossBorn[980^2];
CrossBorn990sq = CrossBorn[990^2];
CrossBorn1000sq = CrossBorn[1000^2];
```

In[2238]:=
```
As50sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 50^2, g];
As60sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 60^2, g];
As70sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 70^2, g];
As80sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 80^2, g];
As90sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 90^2, g];
```

In[2243]:=
```
As100sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 100^2, g];
As110sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 110^2, g];
As120sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 120^2, g];
As130sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 130^2, g];
As140sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 140^2, g];
As150sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 150^2, g];
As160sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 160^2, g];
As170sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 170^2, g];
As180sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 180^2, g];
As190sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 190^2, g];
```

In[2253]:=
```
As200sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 200^2, g];
As210sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 210^2, g];
As220sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 220^2, g];
As230sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 230^2, g];
As240sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 240^2, g];
As250sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 250^2, g];
As260sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 260^2, g];
As270sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 270^2, g];
As280sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 280^2, g];
As290sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 290^2, g];
```

In[2263]:=
```
As300sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 300^2, g];
As310sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 310^2, g];
As320sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 320^2, g];
As330sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 330^2, g];
As340sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 340^2, g];
As350sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 350^2, g];
As360sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 360^2, g];
As370sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 370^2, g];
As380sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 380^2, g];
As390sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 390^2, g];
```

In[2273]:=
```
As400sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 400^2, g];
As410sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 410^2, g];
As420sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 420^2, g];
As430sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 430^2, g];
As440sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 440^2, g];
As450sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 450^2, g];
As460sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 460^2, g];
As470sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 470^2, g];
As480sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 480^2, g];
As490sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 490^2, g];
```

In[2283]:=
```
As500sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 500^2, g];
As510sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 510^2, g];
As520sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 520^2, g];
As530sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 530^2, g];
As540sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 540^2, g];
As550sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 550^2, g];
As560sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 560^2, g];
As570sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 570^2, g];
As580sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 580^2, g];
As590sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 590^2, g];
```

In[2293]:=
```
As600sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 600^2, g];
As610sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 610^2, g];
As620sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 620^2, g];
As630sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 630^2, g];
As640sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 640^2, g];
As650sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 650^2, g];
As660sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 660^2, g];
As670sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 670^2, g];
As680sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 680^2, g];
As690sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 690^2, g];
```

In[2303]:=
```
As700sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 700^2, g];
As710sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 710^2, g];
As720sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 720^2, g];
As730sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 730^2, g];
As740sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 740^2, g];
As750sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 750^2, g];
As760sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 760^2, g];
As770sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 770^2, g];
As780sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 780^2, g];
As790sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 790^2, g];
```

In[2313]:=
```
As800sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 800^2, g];
As810sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 810^2, g];
As820sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 820^2, g];
As830sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 830^2, g];
As840sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 840^2, g];
As850sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 850^2, g];
As860sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 860^2, g];
As870sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 870^2, g];
As880sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 880^2, g];
As890sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 890^2, g];
```

In[2323]:=
```
As900sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 900^2, g];
As910sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 910^2, g];
As920sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 920^2, g];
As930sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 930^2, g];
As940sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 940^2, g];
As950sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 950^2, g];
As960sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 960^2, g];
As970sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 970^2, g];
As980sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 980^2, g];
As990sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 990^2, g];
As1000sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 1000^2, g];
```

In[2334]:=
$$\text{Correction50sq} = \left(1 + \frac{3\,\text{As50sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction60sq} = \left(1 + \frac{3\,\text{As60sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction70sq} = \left(1 + \frac{3\,\text{As70sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction80sq} = \left(1 + \frac{3\,\text{As80sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction90sq} = \left(1 + \frac{3\,\text{As90sq}}{4\,\pi}\,C_F\right);$$

In[2339]:=
$$\text{Correction100sq} = \left(1 + \frac{3\,\text{As100sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction110sq} = \left(1 + \frac{3\,\text{As110sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction120sq} = \left(1 + \frac{3\,\text{As120sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction130sq} = \left(1 + \frac{3\,\text{As130sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction140sq} = \left(1 + \frac{3\,\text{As140sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction150sq} = \left(1 + \frac{3\,\text{As150sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction160sq} = \left(1 + \frac{3\,\text{As160sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction170sq} = \left(1 + \frac{3\,\text{As170sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction180sq} = \left(1 + \frac{3\,\text{As180sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction190sq} = \left(1 + \frac{3\,\text{As190sq}}{4\,\pi}\,C_F\right);$$

In[2349]:=
$$\text{Correction200sq} = \left(1 + \frac{3\,\text{As200sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction210sq} = \left(1 + \frac{3\,\text{As210sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction220sq} = \left(1 + \frac{3\,\text{As220sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction230sq} = \left(1 + \frac{3\,\text{As230sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction240sq} = \left(1 + \frac{3\,\text{As240sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction250sq} = \left(1 + \frac{3\,\text{As250sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction260sq} = \left(1 + \frac{3\,\text{As260sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction270sq} = \left(1 + \frac{3\,\text{As270sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction280sq} = \left(1 + \frac{3\,\text{As280sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction290sq} = \left(1 + \frac{3\,\text{As290sq}}{4\,\pi}\,C_F\right);$$

In[2359]:=
$$\text{Correction300sq} = \left(1 + \frac{3\,\text{As300sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction310sq} = \left(1 + \frac{3\,\text{As310sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction320sq} = \left(1 + \frac{3\,\text{As320sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction330sq} = \left(1 + \frac{3\,\text{As330sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction340sq} = \left(1 + \frac{3\,\text{As340sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction350sq} = \left(1 + \frac{3\,\text{As350sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction360sq} = \left(1 + \frac{3\,\text{As360sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction370sq} = \left(1 + \frac{3\,\text{As370sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction380sq} = \left(1 + \frac{3\,\text{As380sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction390sq} = \left(1 + \frac{3\,\text{As390sq}}{4\,\pi}\,C_F\right);$$

In[2369]:=
$$\text{Correction400sq} = \left(1 + \frac{3\,\text{As400sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction410sq} = \left(1 + \frac{3\,\text{As410sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction420sq} = \left(1 + \frac{3\,\text{As420sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction430sq} = \left(1 + \frac{3\,\text{As430sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction440sq} = \left(1 + \frac{3\,\text{As440sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction450sq} = \left(1 + \frac{3\,\text{As450sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction460sq} = \left(1 + \frac{3\,\text{As460sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction470sq} = \left(1 + \frac{3\,\text{As470sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction480sq} = \left(1 + \frac{3\,\text{As480sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction490sq} = \left(1 + \frac{3\,\text{As490sq}}{4\,\pi}\,C_F\right);$$

In[2379]:=
$$\text{Correction500sq} = \left(1 + \frac{3\,\text{As500sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction510sq} = \left(1 + \frac{3\,\text{As510sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction520sq} = \left(1 + \frac{3\,\text{As520sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction530sq} = \left(1 + \frac{3\,\text{As530sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction540sq} = \left(1 + \frac{3\,\text{As540sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction550sq} = \left(1 + \frac{3\,\text{As550sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction560sq} = \left(1 + \frac{3\,\text{As560sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction570sq} = \left(1 + \frac{3\,\text{As570sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction580sq} = \left(1 + \frac{3\,\text{As580sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction590sq} = \left(1 + \frac{3\,\text{As590sq}}{4\,\pi}\,C_F\right);$$

In[2389]:=
$$\text{Correction600sq} = \left(1 + \frac{3\,\text{As600sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction610sq} = \left(1 + \frac{3\,\text{As610sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction620sq} = \left(1 + \frac{3\,\text{As620sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction630sq} = \left(1 + \frac{3\,\text{As630sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction640sq} = \left(1 + \frac{3\,\text{As640sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction650sq} = \left(1 + \frac{3\,\text{As650sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction660sq} = \left(1 + \frac{3\,\text{As660sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction670sq} = \left(1 + \frac{3\,\text{As670sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction680sq} = \left(1 + \frac{3\,\text{As680sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction690sq} = \left(1 + \frac{3\,\text{As690sq}}{4\,\pi}\,C_F\right);$$

In[2399]:=
$$\text{Correction700sq} = \left(1 + \frac{3\,\text{As700sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction710sq} = \left(1 + \frac{3\,\text{As710sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction720sq} = \left(1 + \frac{3\,\text{As720sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction730sq} = \left(1 + \frac{3\,\text{As730sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction740sq} = \left(1 + \frac{3\,\text{As740sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction750sq} = \left(1 + \frac{3\,\text{As750sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction760sq} = \left(1 + \frac{3\,\text{As760sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction770sq} = \left(1 + \frac{3\,\text{As770sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction780sq} = \left(1 + \frac{3\,\text{As780sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction790sq} = \left(1 + \frac{3\,\text{As790sq}}{4\,\pi}\,C_F\right);$$

In[2409]:=
$$\text{Correction800sq} = \left(1 + \frac{3\,\text{As800sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction810sq} = \left(1 + \frac{3\,\text{As810sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction820sq} = \left(1 + \frac{3\,\text{As820sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction830sq} = \left(1 + \frac{3\,\text{As830sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction840sq} = \left(1 + \frac{3\,\text{As840sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction850sq} = \left(1 + \frac{3\,\text{As850sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction860sq} = \left(1 + \frac{3\,\text{As860sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction870sq} = \left(1 + \frac{3\,\text{As870sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction880sq} = \left(1 + \frac{3\,\text{As880sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction890sq} = \left(1 + \frac{3\,\text{As890sq}}{4\,\pi}\,C_F\right);$$

In[2419]:=
$$\text{Correction900sq} = \left(1 + \frac{3\,\text{As900sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction910sq} = \left(1 + \frac{3\,\text{As910sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction920sq} = \left(1 + \frac{3\,\text{As920sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction930sq} = \left(1 + \frac{3\,\text{As930sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction940sq} = \left(1 + \frac{3\,\text{As940sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction950sq} = \left(1 + \frac{3\,\text{As950sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction960sq} = \left(1 + \frac{3\,\text{As960sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction970sq} = \left(1 + \frac{3\,\text{As970sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction980sq} = \left(1 + \frac{3\,\text{As980sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction990sq} = \left(1 + \frac{3\,\text{As990sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction1000sq} = \left(1 + \frac{3\,\text{As1000sq}}{4\,\pi}\,C_F\right);$$

In[2430]:=
```
PlotCross50sq = CrossBorn50sq * Correction50sq;
PlotCross60sq = CrossBorn60sq * Correction60sq;
PlotCross70sq = CrossBorn70sq * Correction70sq;
PlotCross80sq = CrossBorn80sq * Correction80sq;
PlotCross90sq = CrossBorn90sq * Correction90sq;
```

In[2435]:=
```
PlotCross100sq = CrossBorn100sq * Correction100sq;
PlotCross110sq = CrossBorn110sq * Correction110sq;
PlotCross120sq = CrossBorn120sq * Correction120sq;
PlotCross130sq = CrossBorn130sq * Correction130sq;
PlotCross140sq = CrossBorn140sq * Correction140sq;
PlotCross150sq = CrossBorn150sq * Correction150sq;
PlotCross160sq = CrossBorn160sq * Correction160sq;
PlotCross170sq = CrossBorn170sq * Correction170sq;
PlotCross180sq = CrossBorn180sq * Correction180sq;
PlotCross190sq = CrossBorn190sq * Correction190sq;
```

In[2445]:=
```
PlotCross200sq = CrossBorn200sq * Correction200sq;
PlotCross210sq = CrossBorn210sq * Correction210sq;
PlotCross220sq = CrossBorn220sq * Correction220sq;
PlotCross230sq = CrossBorn230sq * Correction230sq;
PlotCross240sq = CrossBorn240sq * Correction240sq;
PlotCross250sq = CrossBorn250sq * Correction250sq;
PlotCross260sq = CrossBorn260sq * Correction260sq;
PlotCross270sq = CrossBorn270sq * Correction270sq;
PlotCross280sq = CrossBorn280sq * Correction280sq;
PlotCross290sq = CrossBorn290sq * Correction290sq;
```

In[2455]:=
```
PlotCross300sq = CrossBorn300sq * Correction300sq;
PlotCross310sq = CrossBorn310sq * Correction310sq;
PlotCross320sq = CrossBorn320sq * Correction320sq;
PlotCross330sq = CrossBorn330sq * Correction330sq;
PlotCross340sq = CrossBorn340sq * Correction340sq;
PlotCross350sq = CrossBorn350sq * Correction350sq;
PlotCross360sq = CrossBorn360sq * Correction360sq;
PlotCross370sq = CrossBorn370sq * Correction370sq;
PlotCross380sq = CrossBorn380sq * Correction380sq;
PlotCross390sq = CrossBorn390sq * Correction390sq;
```

In[2465]:=
```
PlotCross400sq = CrossBorn400sq * Correction400sq;
PlotCross410sq = CrossBorn410sq * Correction410sq;
PlotCross420sq = CrossBorn420sq * Correction420sq;
PlotCross430sq = CrossBorn430sq * Correction430sq;
PlotCross440sq = CrossBorn440sq * Correction440sq;
PlotCross450sq = CrossBorn450sq * Correction450sq;
PlotCross460sq = CrossBorn460sq * Correction460sq;
PlotCross470sq = CrossBorn470sq * Correction470sq;
PlotCross480sq = CrossBorn480sq * Correction480sq;
PlotCross490sq = CrossBorn490sq * Correction490sq;
```

In[2475]:=
```
PlotCross500sq = CrossBorn500sq * Correction500sq;
PlotCross510sq = CrossBorn510sq * Correction510sq;
PlotCross520sq = CrossBorn520sq * Correction520sq;
PlotCross530sq = CrossBorn530sq * Correction530sq;
PlotCross540sq = CrossBorn540sq * Correction540sq;
PlotCross550sq = CrossBorn550sq * Correction550sq;
PlotCross560sq = CrossBorn560sq * Correction560sq;
PlotCross570sq = CrossBorn570sq * Correction570sq;
PlotCross580sq = CrossBorn580sq * Correction580sq;
PlotCross590sq = CrossBorn590sq * Correction590sq;
```

In[2485]:=
```
PlotCross600sq = CrossBorn600sq * Correction600sq;
PlotCross610sq = CrossBorn610sq * Correction610sq;
PlotCross620sq = CrossBorn620sq * Correction620sq;
PlotCross630sq = CrossBorn630sq * Correction630sq;
PlotCross640sq = CrossBorn640sq * Correction640sq;
PlotCross650sq = CrossBorn650sq * Correction650sq;
PlotCross660sq = CrossBorn660sq * Correction660sq;
PlotCross670sq = CrossBorn670sq * Correction670sq;
PlotCross680sq = CrossBorn680sq * Correction680sq;
PlotCross690sq = CrossBorn690sq * Correction690sq;
```

In[2495]:=
```
PlotCross700sq = CrossBorn700sq * Correction700sq;
PlotCross710sq = CrossBorn710sq * Correction710sq;
PlotCross720sq = CrossBorn720sq * Correction720sq;
PlotCross730sq = CrossBorn730sq * Correction730sq;
PlotCross740sq = CrossBorn740sq * Correction740sq;
PlotCross750sq = CrossBorn750sq * Correction750sq;
PlotCross760sq = CrossBorn760sq * Correction760sq;
PlotCross770sq = CrossBorn770sq * Correction770sq;
PlotCross780sq = CrossBorn780sq * Correction780sq;
PlotCross790sq = CrossBorn790sq * Correction790sq;
```

In[2505]:=
```
PlotCross800sq = CrossBorn800sq * Correction800sq;
PlotCross810sq = CrossBorn810sq * Correction810sq;
PlotCross820sq = CrossBorn820sq * Correction820sq;
PlotCross830sq = CrossBorn830sq * Correction830sq;
PlotCross840sq = CrossBorn840sq * Correction840sq;
PlotCross850sq = CrossBorn850sq * Correction850sq;
PlotCross860sq = CrossBorn860sq * Correction860sq;
PlotCross870sq = CrossBorn870sq * Correction870sq;
PlotCross880sq = CrossBorn880sq * Correction880sq;
PlotCross890sq = CrossBorn890sq * Correction890sq;
```

In[2515]:=
```
PlotCross900sq = CrossBorn900sq * Correction900sq;
PlotCross910sq = CrossBorn910sq * Correction910sq;
PlotCross920sq = CrossBorn920sq * Correction920sq;
PlotCross930sq = CrossBorn930sq * Correction930sq;
PlotCross940sq = CrossBorn940sq * Correction940sq;
PlotCross950sq = CrossBorn950sq * Correction950sq;
PlotCross960sq = CrossBorn960sq * Correction960sq;
PlotCross970sq = CrossBorn970sq * Correction970sq;
PlotCross980sq = CrossBorn980sq * Correction980sq;
PlotCross990sq = CrossBorn990sq * Correction990sq;
PlotCross1000sq = CrossBorn1000sq * Correction1000sq;
```

# Plot Cross Section $\alpha_s$ (s), 3 Loops

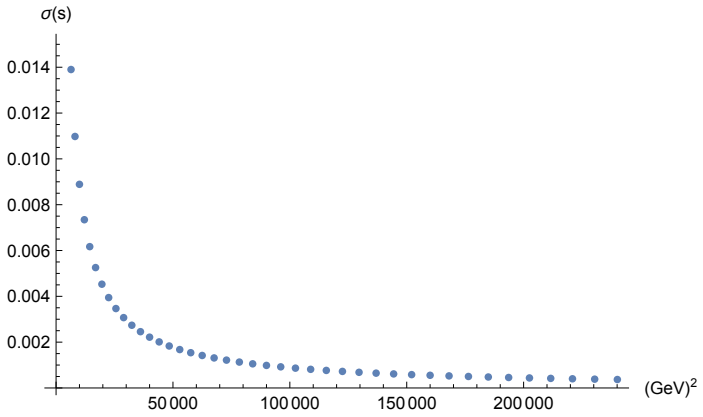
In[2526]:=
```
Table1 = TableForm[{{50^2, PlotCross50sq}, {60^2, PlotCross60sq}, {70^2, PlotCross70sq},
    {80^2, PlotCross80sq}, {90^2, PlotCross90sq}, {100^2, PlotCross100sq},
    {110^2, PlotCross110sq}, {120^2, PlotCross120sq}, {130^2, PlotCross130sq},
    {140^2, PlotCross140sq}, {150^2, PlotCross150sq}, {160^2, PlotCross160sq},
    {170^2, PlotCross170sq}, {180^2, PlotCross180sq}, {190^2, PlotCross190sq},
    {200^2, PlotCross200sq}, {210^2, PlotCross210sq}, {220^2, PlotCross220sq},
    {230^2, PlotCross230sq}, {240^2, PlotCross240sq}, {250^2, PlotCross250sq},
    {260^2, PlotCross260sq}, {270^2, PlotCross270sq}, {280^2, PlotCross280sq},
    {290^2, PlotCross290sq}, {300^2, PlotCross300sq}, {310^2, PlotCross310sq},
    {320^2, PlotCross320sq}, {330^2, PlotCross330sq}, {340^2, PlotCross340sq},
    {350^2, PlotCross350sq}, {360^2, PlotCross360sq}, {370^2, PlotCross370sq},
    {380^2, PlotCross380sq}, {390^2, PlotCross390sq}, {400^2, PlotCross400sq},
    {410^2, PlotCross410sq}, {420^2, PlotCross420sq}, {430^2, PlotCross430sq},
    {440^2, PlotCross440sq}, {450^2, PlotCross450sq}, {460^2, PlotCross460sq},
    {470^2, PlotCross470sq}, {480^2, PlotCross480sq}, {490^2, PlotCross490sq}},
  TableHeadings → {None, {"(GeV)^2", "σ(s)"}}]
```

Out[2526]//TableForm=

| $(\text{GeV})^2$ | $\sigma(s)$ |
|---|---|
| 2500 | 0.03565671302751665790763 |
| 3600 | 0.02474130956468746203983 |
| 4900 | 0.01816542668209675686974 |
| 6400 | 0.01390042631466346142361 |
| 8100 | 0.01097806116102646613988 |
| 10 000 | 0.00888874601573238322258 |
| 12 100 | 0.00734355173280952224709 |
| 14 400 | 0.00616874717240972417844 |
| 16 900 | 0.00525477888392967986269 |
| 19 600 | 0.00452979085949536485903 9 |
| 22 500 | 0.00394506657293547123700 4 |
| 25 600 | 0.00346663126767822297645 0 |
| 28 900 | 0.00307020602562536070505 61 |
| 32 400 | 0.00273806756917263349709 4 |
| 36 100 | 0.00245703352407853895694 5 |
| 40 000 | 0.00221713470286858188956 9 |
| 44 100 | 0.00201071915902566951704 3 |
| 48 400 | 0.00183183469666613705597 3 |
| 52 900 | 0.00167579515184475606940 2 |
| 57 600 | 0.00153887049934757905781 8 |
| 62 500 | 0.00141806197240309278389 9 |
| 67 600 | 0.00131093655115711537494 4 |
| 72 900 | 0.00121550356090497480691 2 |
| 78 400 | 0.00113012156695850477357 7 |
| 84 100 | 0.00105342735447833961011 4 |
| 90 000 | 0.00098428120318945928595 2 |
| 96 100 | 0.00092172432027777961187 9 |
| 102 400 | 0.00086494543974120517890 9 |
| 108 900 | 0.00081325439985895669166 5 |
| 115 600 | 0.00076606108108842636582 0 |
| 122 500 | 0.00072285849667475309145 4 |
| 129 600 | 0.00068320912595962574941 2 |
| 136 900 | 0.00064673379872029505435 6 |
| 144 400 | 0.00061310260052070997538 5 |
| 152 100 | 0.00058202738979579821587 7 |
| 160 000 | 0.00055325560832497195905 8 |
| 168 100 | 0.00052656513577921064392 85 |
| 176 400 | 0.00050175999181584759317 61 |
| 184 900 | 0.00047866672985164393193 95 |
| 193 600 | 0.00045713139816639198598 53 |
| 202 500 | 0.00043701696858408227236 16 |
| 211 600 | 0.00041820115228488981975 31 |
| 220 900 | 0.00040057453754339685946 87 |
| 230 400 | 0.00038403899628817533951 21 |
| 240 100 | 0.00036850631603333501542 03 |

In[2527]:=
```
Plot3 = ListPlot[%, AxesLabel → {"(GeV)^2", "σ(s)"}]
```

Out[2527]=



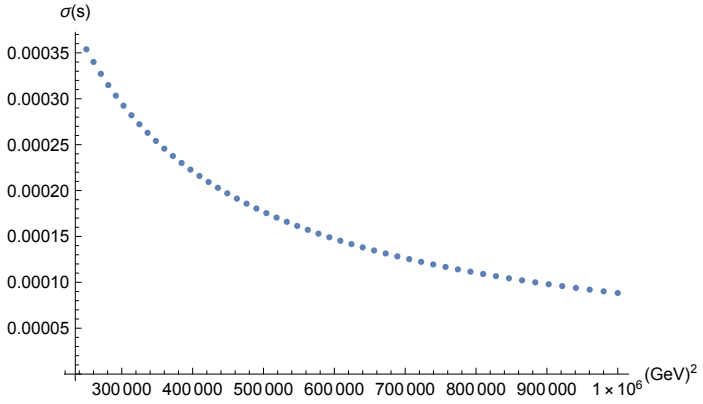

In[2528]:=
```
Table2 =
 TableForm[{{500^2, PlotCross500sq}, {510^2, PlotCross510sq}, {520^2, PlotCross520sq},
   {530^2, PlotCross530sq}, {540^2, PlotCross540sq}, {550^2, PlotCross550sq},
   {560^2, PlotCross560sq}, {570^2, PlotCross570sq}, {580^2, PlotCross580sq},
   {590^2, PlotCross590sq}, {600^2, PlotCross600sq}, {610^2, PlotCross610sq},
   {620^2, PlotCross620sq}, {630^2, PlotCross630sq}, {640^2, PlotCross640sq},
   {650^2, PlotCross650sq}, {660^2, PlotCross660sq}, {670^2, PlotCross670sq},
   {680^2, PlotCross680sq}, {690^2, PlotCross690sq}, {700^2, PlotCross700sq},
   {710^2, PlotCross710sq}, {720^2, PlotCross720sq}, {730^2, PlotCross730sq},
   {740^2, PlotCross740sq}, {750^2, PlotCross750sq}, {760^2, PlotCross760sq},
   {770^2, PlotCross770sq}, {780^2, PlotCross780sq}, {790^2, PlotCross790sq},
   {800^2, PlotCross800sq}, {810^2, PlotCross810sq}, {820^2, PlotCross820sq},
   {830^2, PlotCross830sq}, {840^2, PlotCross840sq}, {850^2, PlotCross850sq},
   {860^2, PlotCross860sq}, {870^2, PlotCross870sq}, {880^2, PlotCross880sq},
   {890^2, PlotCross890sq}, {900^2, PlotCross900sq}, {910^2, PlotCross910sq},
   {920^2, PlotCross920sq}, {930^2, PlotCross930sq}, {940^2, PlotCross940sq},
   {950^2, PlotCross950sq}, {960^2, PlotCross960sq}, {970^2, PlotCross970sq},
   {980^2, PlotCross980sq}, {990^2, PlotCross990sq}, {1000^2, PlotCross1000sq}},
  TableHeadings → {None, {"(GeV)^2", "σ(s)"}}]
```

Out[2528]//TableForm=

| $(\text{GeV})^2$ | $\sigma(s)$ |
|---|---|
| 250 000 | 0.000353897021476243758644 1 |
| 260 100 | 0.000340139356295670163128 2 |
| 270 400 | 0.000327168400736087546439 8 |
| 280 900 | 0.000314925304671173535216 2 |
| 291 600 | 0.000303356619193199633245 9 |
| 302 500 | 0.000292413712524394469671 9 |
| 313 600 | 0.000282052258309123840648 0 |
| 324 900 | 0.000272231786214953437041 7 |
| 336 400 | 0.000262915286320343656145 5 |
| 348 100 | 0.000254068860055944525034 8 |
| 360 000 | 0.000245661411542570906520 5 |
| 372 100 | 0.000237664374070060090787 8 |
| 384 400 | 0.000230051467218145953905 8 |
| 396 900 | 0.000222798480758203707885 2 |
| 409 600 | 0.000215883082013559102888 3 |
| 422 500 | 0.000209284643812622427542 7 |
| 435 600 | 0.000202984090557010143658 1 |
| 448 900 | 0.000196963760257246694672 5 |
| 462 400 | 0.000191207280670825112003 3 |
| 476 100 | 0.000185699457918984050857 5 |
| 490 000 | 0.000180426176165867309658 8 |
| 504 100 | 0.000175374307122042264108 3 |
| 518 400 | 0.000170531628288066328157 5 |
| 532 900 | 0.000165886748986587153956 8 |
| 547 600 | 0.000161429043346431246328 4 |
| 562 500 | 0.000157148589501874798689 1 |
| 577 600 | 0.000153036114356990078167 6 |
| 592 900 | 0.000149082943340471315021 4 |
| 608 400 | 0.000145280954642234146450 6 |
| 624 100 | 0.000141622537480683369397 0 |
| 640 000 | 0.000138100553999987910003 0 |
| 656 100 | 0.000134708304440955623217 1 |
| 672 400 | 0.000131439495267989317221 6 |
| 688 900 | 0.000128288209968835951012 3 |
| 705 600 | 0.000125248882274019977227 1 |
| 722 500 | 0.000122316271569500417863 0 |
| 739 600 | 0.000119485440299658648321 2 |
| 756 900 | 0.000116751733178597288653 1 |
| 774 400 | 0.000114110758046245066196 4 |
| 792 100 | 0.000111558368222207950958 0 |
| 810 000 | 0.000109090646224934779373 7 |
| 828 100 | 0.000106703888736794510955 0 |
| 846 400 | 0.000104394592707282426394 4 |
| 864 900 | 0.000102159442496949684880 7 |
| 883 600 | 0.000099995297973929477023 5 |
| 902 500 | 0.000097899183483239975163 5 |
| 921 600 | 0.000095868277616490358904 2 |
| 940 900 | 0.000093899903716298328246 4 |
| 960 400 | 0.000091991521055731185980 8 |
| 980 100 | 0.000090140716638482695270 5 |
| 1 000 000 | 0.000088345197570360659510 3 |

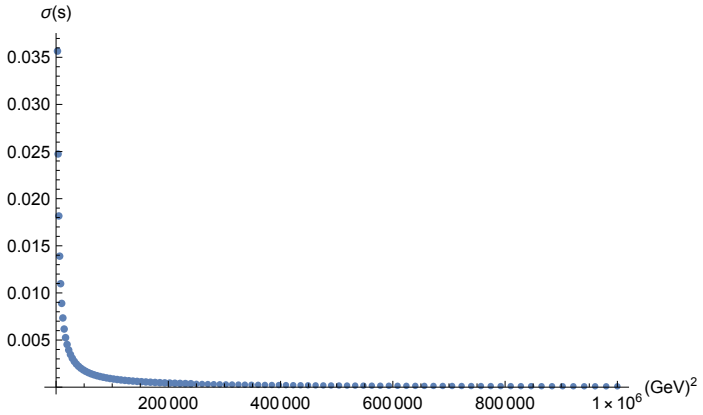
In[2529]:=
```
Plot4 = ListPlot[%, AxesLabel → {"(GeV)^2", "σ(s)"}]
```

Out[2529]=



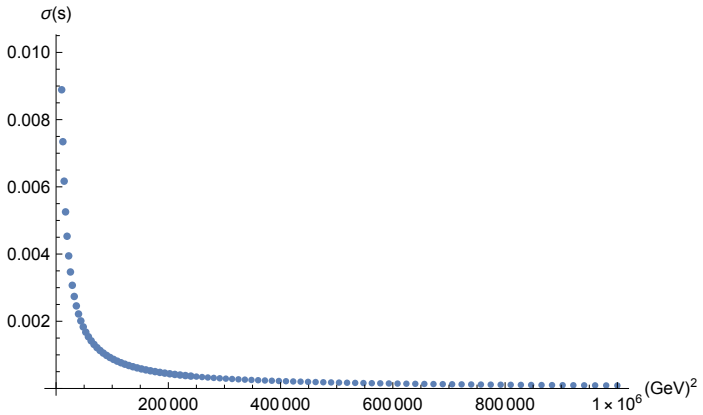

In[2530]:=
```
Show[{Plot3, Plot4}, PlotRange → All]
```

Out[2530]=



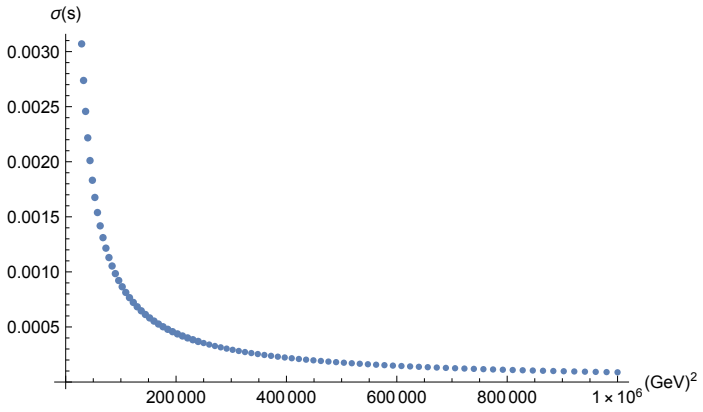

In[2531]:=
```
Show[{Plot3, Plot4}, PlotRange → {{0, 1000^2}, {0, 0.01}}]
```

Out[2531]=



In[2532]:=
```
PlotCross3Loop = Show[{Plot3, Plot4}, PlotRange → {{0, 1000^2}, {0, 0.003}}]
```

Out[2532]=




# Run Cross Section $\alpha_s$ (s), 4 Loops

In[2533]:=
```
g = 4;
α = 1 / 137;
Conversion = 389 379;
n = 3;
C_F = (n^2 - 1) / (2 n);
Born = 4 π α^2 / (3 s);
```

In[2539]:=
```
CrossBorn[s_] = Conversion * Born;
CrossBorn50sq = CrossBorn[50^2];
CrossBorn60sq = CrossBorn[60^2];
CrossBorn70sq = CrossBorn[70^2];
CrossBorn80sq = CrossBorn[80^2];
CrossBorn90sq = CrossBorn[90^2];
```

In[2545]:=
```
CrossBorn100sq = CrossBorn[100^2];
CrossBorn110sq = CrossBorn[110^2];
CrossBorn120sq = CrossBorn[120^2];
CrossBorn130sq = CrossBorn[130^2];
CrossBorn140sq = CrossBorn[140^2];
CrossBorn150sq = CrossBorn[150^2];
CrossBorn160sq = CrossBorn[160^2];
CrossBorn170sq = CrossBorn[170^2];
CrossBorn180sq = CrossBorn[180^2];
CrossBorn190sq = CrossBorn[190^2];
```

In[2555]:=
```
CrossBorn200sq = CrossBorn[200^2];
CrossBorn210sq = CrossBorn[210^2];
CrossBorn220sq = CrossBorn[220^2];
CrossBorn230sq = CrossBorn[230^2];
CrossBorn240sq = CrossBorn[240^2];
CrossBorn250sq = CrossBorn[250^2];
CrossBorn260sq = CrossBorn[260^2];
CrossBorn270sq = CrossBorn[270^2];
CrossBorn280sq = CrossBorn[280^2];
CrossBorn290sq = CrossBorn[290^2];
```

In[2565]:=
```
CrossBorn300sq = CrossBorn[300^2];
CrossBorn310sq = CrossBorn[310^2];
CrossBorn320sq = CrossBorn[320^2];
CrossBorn330sq = CrossBorn[330^2];
CrossBorn340sq = CrossBorn[340^2];
CrossBorn350sq = CrossBorn[350^2];
CrossBorn360sq = CrossBorn[360^2];
CrossBorn370sq = CrossBorn[370^2];
CrossBorn380sq = CrossBorn[380^2];
CrossBorn390sq = CrossBorn[390^2];
```

In[2575]:=
```
CrossBorn400sq = CrossBorn[400^2];
CrossBorn410sq = CrossBorn[410^2];
CrossBorn420sq = CrossBorn[420^2];
CrossBorn430sq = CrossBorn[430^2];
CrossBorn440sq = CrossBorn[440^2];
CrossBorn450sq = CrossBorn[450^2];
CrossBorn460sq = CrossBorn[460^2];
CrossBorn470sq = CrossBorn[470^2];
CrossBorn480sq = CrossBorn[480^2];
CrossBorn490sq = CrossBorn[490^2];
```

In[2585]:=
```
CrossBorn500sq = CrossBorn[500^2];
CrossBorn510sq = CrossBorn[510^2];
CrossBorn520sq = CrossBorn[520^2];
CrossBorn530sq = CrossBorn[530^2];
CrossBorn540sq = CrossBorn[540^2];
CrossBorn550sq = CrossBorn[550^2];
CrossBorn560sq = CrossBorn[560^2];
CrossBorn570sq = CrossBorn[570^2];
CrossBorn580sq = CrossBorn[580^2];
CrossBorn590sq = CrossBorn[590^2];
```

In[2595]:=
```
CrossBorn600sq = CrossBorn[600^2];
CrossBorn610sq = CrossBorn[610^2];
CrossBorn620sq = CrossBorn[620^2];
CrossBorn630sq = CrossBorn[630^2];
CrossBorn640sq = CrossBorn[640^2];
CrossBorn650sq = CrossBorn[650^2];
CrossBorn660sq = CrossBorn[660^2];
CrossBorn670sq = CrossBorn[670^2];
CrossBorn680sq = CrossBorn[680^2];
CrossBorn690sq = CrossBorn[690^2];
```

In[2605]:=
```
CrossBorn700sq = CrossBorn[700^2];
CrossBorn710sq = CrossBorn[710^2];
CrossBorn720sq = CrossBorn[720^2];
CrossBorn730sq = CrossBorn[730^2];
CrossBorn740sq = CrossBorn[740^2];
CrossBorn750sq = CrossBorn[750^2];
CrossBorn760sq = CrossBorn[760^2];
CrossBorn770sq = CrossBorn[770^2];
CrossBorn780sq = CrossBorn[780^2];
CrossBorn790sq = CrossBorn[790^2];
```

In[2615]:=
```
CrossBorn800sq = CrossBorn[800^2];
CrossBorn810sq = CrossBorn[810^2];
CrossBorn820sq = CrossBorn[820^2];
CrossBorn830sq = CrossBorn[830^2];
CrossBorn840sq = CrossBorn[840^2];
CrossBorn850sq = CrossBorn[850^2];
CrossBorn860sq = CrossBorn[860^2];
CrossBorn870sq = CrossBorn[870^2];
CrossBorn880sq = CrossBorn[880^2];
CrossBorn890sq = CrossBorn[890^2];
```

In[2625]:=
```
CrossBorn900sq = CrossBorn[900^2];
CrossBorn910sq = CrossBorn[910^2];
CrossBorn920sq = CrossBorn[920^2];
CrossBorn930sq = CrossBorn[930^2];
CrossBorn940sq = CrossBorn[940^2];
CrossBorn950sq = CrossBorn[950^2];
CrossBorn960sq = CrossBorn[960^2];
CrossBorn970sq = CrossBorn[970^2];
CrossBorn980sq = CrossBorn[980^2];
CrossBorn990sq = CrossBorn[990^2];
CrossBorn1000sq = CrossBorn[1000^2];
```

In[2636]:=
```
As50sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 50^2, g];
As60sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 60^2, g];
As70sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 70^2, g];
As80sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 80^2, g];
As90sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 90^2, g];
```

In[2641]:=
```
As100sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 100^2, g];
As110sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 110^2, g];
As120sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 120^2, g];
As130sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 130^2, g];
As140sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 140^2, g];
As150sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 150^2, g];
As160sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 160^2, g];
As170sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 170^2, g];
As180sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 180^2, g];
As190sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 190^2, g];
```

In[2651]:=
```
As200sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 200^2, g];
As210sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 210^2, g];
As220sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 220^2, g];
As230sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 230^2, g];
As240sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 240^2, g];
As250sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 250^2, g];
As260sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 260^2, g];
As270sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 270^2, g];
As280sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 280^2, g];
As290sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 290^2, g];
```

In[2661]:=
```
As300sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 300^2, g];
As310sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 310^2, g];
As320sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 320^2, g];
As330sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 330^2, g];
As340sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 340^2, g];
As350sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 350^2, g];
As360sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 360^2, g];
As370sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 370^2, g];
As380sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 380^2, g];
As390sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 390^2, g];
```

In[2671]:=
```
As400sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 400^2, g];
As410sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 410^2, g];
As420sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 420^2, g];
As430sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 430^2, g];
As440sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 440^2, g];
As450sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 450^2, g];
As460sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 460^2, g];
As470sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 470^2, g];
As480sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 480^2, g];
As490sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 490^2, g];
```

In[2681]:=
```
As500sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 500^2, g];
As510sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 510^2, g];
As520sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 520^2, g];
As530sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 530^2, g];
As540sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 540^2, g];
As550sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 550^2, g];
As560sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 560^2, g];
As570sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 570^2, g];
As580sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 580^2, g];
As590sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 590^2, g];
```

In[2691]:=
```
As600sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 600^2, g];
As610sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 610^2, g];
As620sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 620^2, g];
As630sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 630^2, g];
As640sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 640^2, g];
As650sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 650^2, g];
As660sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 660^2, g];
As670sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 670^2, g];
As680sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 680^2, g];
As690sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 690^2, g];
```

In[2701]:=
```
As700sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 700^2, g];
As710sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 710^2, g];
As720sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 720^2, g];
As730sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 730^2, g];
As740sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 740^2, g];
As750sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 750^2, g];
As760sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 760^2, g];
As770sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 770^2, g];
As780sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 780^2, g];
As790sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 790^2, g];
```

In[2711]:=
```
As800sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 800^2, g];
As810sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 810^2, g];
As820sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 820^2, g];
As830sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 830^2, g];
As840sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 840^2, g];
As850sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 850^2, g];
As860sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 860^2, g];
As870sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 870^2, g];
As880sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 880^2, g];
As890sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 890^2, g];
```

In[2721]:=
```
As900sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 900^2, g];
As910sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 910^2, g];
As920sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 920^2, g];
As930sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 930^2, g];
As940sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 940^2, g];
As950sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 950^2, g];
As960sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 960^2, g];
As970sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 970^2, g];
As980sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 980^2, g];
As990sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 990^2, g];
As1000sq = AsRunDec[asMz /. NumDef, Mz /. NumDef, 1000^2, g];
```

In[2732]:=
$$\text{Correction50sq} = \left(1 + \frac{3\,\text{As50sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction60sq} = \left(1 + \frac{3\,\text{As60sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction70sq} = \left(1 + \frac{3\,\text{As70sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction80sq} = \left(1 + \frac{3\,\text{As80sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction90sq} = \left(1 + \frac{3\,\text{As90sq}}{4\,\pi}\,C_F\right);$$

In[2737]:=
$$\text{Correction100sq} = \left(1 + \frac{3\,\text{As100sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction110sq} = \left(1 + \frac{3\,\text{As110sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction120sq} = \left(1 + \frac{3\,\text{As120sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction130sq} = \left(1 + \frac{3\,\text{As130sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction140sq} = \left(1 + \frac{3\,\text{As140sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction150sq} = \left(1 + \frac{3\,\text{As150sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction160sq} = \left(1 + \frac{3\,\text{As160sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction170sq} = \left(1 + \frac{3\,\text{As170sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction180sq} = \left(1 + \frac{3\,\text{As180sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction190sq} = \left(1 + \frac{3\,\text{As190sq}}{4\,\pi}\,C_F\right);$$

In[2747]:=
$$\text{Correction200sq} = \left(1 + \frac{3\,\text{As200sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction210sq} = \left(1 + \frac{3\,\text{As210sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction220sq} = \left(1 + \frac{3\,\text{As220sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction230sq} = \left(1 + \frac{3\,\text{As230sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction240sq} = \left(1 + \frac{3\,\text{As240sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction250sq} = \left(1 + \frac{3\,\text{As250sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction260sq} = \left(1 + \frac{3\,\text{As260sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction270sq} = \left(1 + \frac{3\,\text{As270sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction280sq} = \left(1 + \frac{3\,\text{As280sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction290sq} = \left(1 + \frac{3\,\text{As290sq}}{4\,\pi}\,C_F\right);$$

In[2757]:=
$$\text{Correction300sq} = \left(1 + \frac{3\,\text{As300sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction310sq} = \left(1 + \frac{3\,\text{As310sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction320sq} = \left(1 + \frac{3\,\text{As320sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction330sq} = \left(1 + \frac{3\,\text{As330sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction340sq} = \left(1 + \frac{3\,\text{As340sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction350sq} = \left(1 + \frac{3\,\text{As350sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction360sq} = \left(1 + \frac{3\,\text{As360sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction370sq} = \left(1 + \frac{3\,\text{As370sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction380sq} = \left(1 + \frac{3\,\text{As380sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction390sq} = \left(1 + \frac{3\,\text{As390sq}}{4\,\pi}\,C_F\right);$$

In[2767]:=
$$\text{Correction400sq} = \left(1 + \frac{3\,\text{As400sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction410sq} = \left(1 + \frac{3\,\text{As410sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction420sq} = \left(1 + \frac{3\,\text{As420sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction430sq} = \left(1 + \frac{3\,\text{As430sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction440sq} = \left(1 + \frac{3\,\text{As440sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction450sq} = \left(1 + \frac{3\,\text{As450sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction460sq} = \left(1 + \frac{3\,\text{As460sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction470sq} = \left(1 + \frac{3\,\text{As470sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction480sq} = \left(1 + \frac{3\,\text{As480sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction490sq} = \left(1 + \frac{3\,\text{As490sq}}{4\,\pi}\,C_F\right);$$

In[2777]:=
$$\text{Correction500sq} = \left(1 + \frac{3\,\text{As500sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction510sq} = \left(1 + \frac{3\,\text{As510sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction520sq} = \left(1 + \frac{3\,\text{As520sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction530sq} = \left(1 + \frac{3\,\text{As530sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction540sq} = \left(1 + \frac{3\,\text{As540sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction550sq} = \left(1 + \frac{3\,\text{As550sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction560sq} = \left(1 + \frac{3\,\text{As560sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction570sq} = \left(1 + \frac{3\,\text{As570sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction580sq} = \left(1 + \frac{3\,\text{As580sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction590sq} = \left(1 + \frac{3\,\text{As590sq}}{4\,\pi}\,C_F\right);$$

In[2787]:=
$$\text{Correction600sq} = \left(1 + \frac{3\,\text{As600sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction610sq} = \left(1 + \frac{3\,\text{As610sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction620sq} = \left(1 + \frac{3\,\text{As620sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction630sq} = \left(1 + \frac{3\,\text{As630sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction640sq} = \left(1 + \frac{3\,\text{As640sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction650sq} = \left(1 + \frac{3\,\text{As650sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction660sq} = \left(1 + \frac{3\,\text{As660sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction670sq} = \left(1 + \frac{3\,\text{As670sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction680sq} = \left(1 + \frac{3\,\text{As680sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction690sq} = \left(1 + \frac{3\,\text{As690sq}}{4\,\pi}\,C_F\right);$$

In[2797]:=
$$\text{Correction700sq} = \left(1 + \frac{3\,\text{As700sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction710sq} = \left(1 + \frac{3\,\text{As710sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction720sq} = \left(1 + \frac{3\,\text{As720sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction730sq} = \left(1 + \frac{3\,\text{As730sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction740sq} = \left(1 + \frac{3\,\text{As740sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction750sq} = \left(1 + \frac{3\,\text{As750sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction760sq} = \left(1 + \frac{3\,\text{As760sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction770sq} = \left(1 + \frac{3\,\text{As770sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction780sq} = \left(1 + \frac{3\,\text{As780sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction790sq} = \left(1 + \frac{3\,\text{As790sq}}{4\,\pi}\,C_F\right);$$

In[2807]:=
$$\text{Correction800sq} = \left(1 + \frac{3\,\text{As800sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction810sq} = \left(1 + \frac{3\,\text{As810sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction820sq} = \left(1 + \frac{3\,\text{As820sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction830sq} = \left(1 + \frac{3\,\text{As830sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction840sq} = \left(1 + \frac{3\,\text{As840sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction850sq} = \left(1 + \frac{3\,\text{As850sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction860sq} = \left(1 + \frac{3\,\text{As860sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction870sq} = \left(1 + \frac{3\,\text{As870sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction880sq} = \left(1 + \frac{3\,\text{As880sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction890sq} = \left(1 + \frac{3\,\text{As890sq}}{4\,\pi}\,C_F\right);$$

In[2817]:=
$$\text{Correction900sq} = \left(1 + \frac{3\,\text{As900sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction910sq} = \left(1 + \frac{3\,\text{As910sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction920sq} = \left(1 + \frac{3\,\text{As920sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction930sq} = \left(1 + \frac{3\,\text{As930sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction940sq} = \left(1 + \frac{3\,\text{As940sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction950sq} = \left(1 + \frac{3\,\text{As950sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction960sq} = \left(1 + \frac{3\,\text{As960sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction970sq} = \left(1 + \frac{3\,\text{As970sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction980sq} = \left(1 + \frac{3\,\text{As980sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction990sq} = \left(1 + \frac{3\,\text{As990sq}}{4\,\pi}\,C_F\right);$$
$$\text{Correction1000sq} = \left(1 + \frac{3\,\text{As1000sq}}{4\,\pi}\,C_F\right);$$

In[2828]:=
```
PlotCross50sq = CrossBorn50sq * Correction50sq;
PlotCross60sq = CrossBorn60sq * Correction60sq;
PlotCross70sq = CrossBorn70sq * Correction70sq;
PlotCross80sq = CrossBorn80sq * Correction80sq;
PlotCross90sq = CrossBorn90sq * Correction90sq;
```

In[2833]:=
```
PlotCross100sq = CrossBorn100sq * Correction100sq;
PlotCross110sq = CrossBorn110sq * Correction110sq;
PlotCross120sq = CrossBorn120sq * Correction120sq;
PlotCross130sq = CrossBorn130sq * Correction130sq;
PlotCross140sq = CrossBorn140sq * Correction140sq;
PlotCross150sq = CrossBorn150sq * Correction150sq;
PlotCross160sq = CrossBorn160sq * Correction160sq;
PlotCross170sq = CrossBorn170sq * Correction170sq;
PlotCross180sq = CrossBorn180sq * Correction180sq;
PlotCross190sq = CrossBorn190sq * Correction190sq;
```

In[2843]:=
```
PlotCross200sq = CrossBorn200sq * Correction200sq;
PlotCross210sq = CrossBorn210sq * Correction210sq;
PlotCross220sq = CrossBorn220sq * Correction220sq;
PlotCross230sq = CrossBorn230sq * Correction230sq;
PlotCross240sq = CrossBorn240sq * Correction240sq;
PlotCross250sq = CrossBorn250sq * Correction250sq;
PlotCross260sq = CrossBorn260sq * Correction260sq;
PlotCross270sq = CrossBorn270sq * Correction270sq;
PlotCross280sq = CrossBorn280sq * Correction280sq;
PlotCross290sq = CrossBorn290sq * Correction290sq;
```

In[2853]:=
```
PlotCross300sq = CrossBorn300sq * Correction300sq;
PlotCross310sq = CrossBorn310sq * Correction310sq;
PlotCross320sq = CrossBorn320sq * Correction320sq;
PlotCross330sq = CrossBorn330sq * Correction330sq;
PlotCross340sq = CrossBorn340sq * Correction340sq;
PlotCross350sq = CrossBorn350sq * Correction350sq;
PlotCross360sq = CrossBorn360sq * Correction360sq;
PlotCross370sq = CrossBorn370sq * Correction370sq;
PlotCross380sq = CrossBorn380sq * Correction380sq;
PlotCross390sq = CrossBorn390sq * Correction390sq;
```

In[2863]:=
```
PlotCross400sq = CrossBorn400sq * Correction400sq;
PlotCross410sq = CrossBorn410sq * Correction410sq;
PlotCross420sq = CrossBorn420sq * Correction420sq;
PlotCross430sq = CrossBorn430sq * Correction430sq;
PlotCross440sq = CrossBorn440sq * Correction440sq;
PlotCross450sq = CrossBorn450sq * Correction450sq;
PlotCross460sq = CrossBorn460sq * Correction460sq;
PlotCross470sq = CrossBorn470sq * Correction470sq;
PlotCross480sq = CrossBorn480sq * Correction480sq;
PlotCross490sq = CrossBorn490sq * Correction490sq;
```

In[2873]:=
```
PlotCross500sq = CrossBorn500sq * Correction500sq;
PlotCross510sq = CrossBorn510sq * Correction510sq;
PlotCross520sq = CrossBorn520sq * Correction520sq;
PlotCross530sq = CrossBorn530sq * Correction530sq;
PlotCross540sq = CrossBorn540sq * Correction540sq;
PlotCross550sq = CrossBorn550sq * Correction550sq;
PlotCross560sq = CrossBorn560sq * Correction560sq;
PlotCross570sq = CrossBorn570sq * Correction570sq;
PlotCross580sq = CrossBorn580sq * Correction580sq;
PlotCross590sq = CrossBorn590sq * Correction590sq;
```

In[2883]:=
```
PlotCross600sq = CrossBorn600sq * Correction600sq;
PlotCross610sq = CrossBorn610sq * Correction610sq;
PlotCross620sq = CrossBorn620sq * Correction620sq;
PlotCross630sq = CrossBorn630sq * Correction630sq;
PlotCross640sq = CrossBorn640sq * Correction640sq;
PlotCross650sq = CrossBorn650sq * Correction650sq;
PlotCross660sq = CrossBorn660sq * Correction660sq;
PlotCross670sq = CrossBorn670sq * Correction670sq;
PlotCross680sq = CrossBorn680sq * Correction680sq;
PlotCross690sq = CrossBorn690sq * Correction690sq;
```

In[2893]:=
```
PlotCross700sq = CrossBorn700sq * Correction700sq;
PlotCross710sq = CrossBorn710sq * Correction710sq;
PlotCross720sq = CrossBorn720sq * Correction720sq;
PlotCross730sq = CrossBorn730sq * Correction730sq;
PlotCross740sq = CrossBorn740sq * Correction740sq;
PlotCross750sq = CrossBorn750sq * Correction750sq;
PlotCross760sq = CrossBorn760sq * Correction760sq;
PlotCross770sq = CrossBorn770sq * Correction770sq;
PlotCross780sq = CrossBorn780sq * Correction780sq;
PlotCross790sq = CrossBorn790sq * Correction790sq;
```

In[2903]:=
```
PlotCross800sq = CrossBorn800sq * Correction800sq;
PlotCross810sq = CrossBorn810sq * Correction810sq;
PlotCross820sq = CrossBorn820sq * Correction820sq;
PlotCross830sq = CrossBorn830sq * Correction830sq;
PlotCross840sq = CrossBorn840sq * Correction840sq;
PlotCross850sq = CrossBorn850sq * Correction850sq;
PlotCross860sq = CrossBorn860sq * Correction860sq;
PlotCross870sq = CrossBorn870sq * Correction870sq;
PlotCross880sq = CrossBorn880sq * Correction880sq;
PlotCross890sq = CrossBorn890sq * Correction890sq;
```

In[2913]:=
```
PlotCross900sq = CrossBorn900sq * Correction900sq;
PlotCross910sq = CrossBorn910sq * Correction910sq;
PlotCross920sq = CrossBorn920sq * Correction920sq;
PlotCross930sq = CrossBorn930sq * Correction930sq;
PlotCross940sq = CrossBorn940sq * Correction940sq;
PlotCross950sq = CrossBorn950sq * Correction950sq;
PlotCross960sq = CrossBorn960sq * Correction960sq;
PlotCross970sq = CrossBorn970sq * Correction970sq;
PlotCross980sq = CrossBorn980sq * Correction980sq;
PlotCross990sq = CrossBorn990sq * Correction990sq;
PlotCross1000sq = CrossBorn1000sq * Correction1000sq;
```

# Plot Cross Section $\alpha_s$ (s), 4 Loops

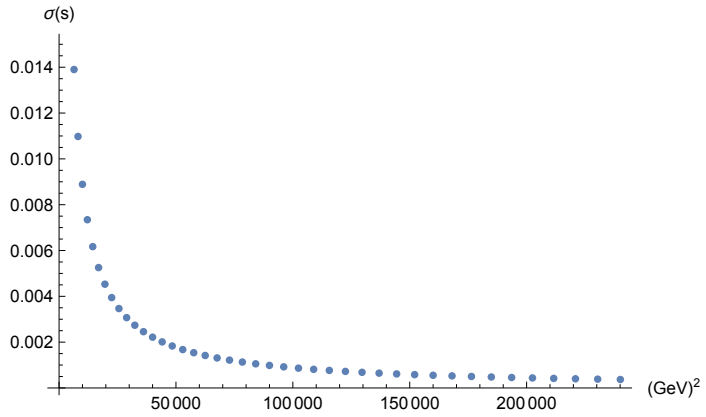
In[2924]:=
```
Table1 = TableForm[{{50^2, PlotCross50sq}, {60^2, PlotCross60sq}, {70^2, PlotCross70sq},
    {80^2, PlotCross80sq}, {90^2, PlotCross90sq}, {100^2, PlotCross100sq},
    {110^2, PlotCross110sq}, {120^2, PlotCross120sq}, {130^2, PlotCross130sq},
    {140^2, PlotCross140sq}, {150^2, PlotCross150sq}, {160^2, PlotCross160sq},
    {170^2, PlotCross170sq}, {180^2, PlotCross180sq}, {190^2, PlotCross190sq},
    {200^2, PlotCross200sq}, {210^2, PlotCross210sq}, {220^2, PlotCross220sq},
    {230^2, PlotCross230sq}, {240^2, PlotCross240sq}, {250^2, PlotCross250sq},
    {260^2, PlotCross260sq}, {270^2, PlotCross270sq}, {280^2, PlotCross280sq},
    {290^2, PlotCross290sq}, {300^2, PlotCross300sq}, {310^2, PlotCross310sq},
    {320^2, PlotCross320sq}, {330^2, PlotCross330sq}, {340^2, PlotCross340sq},
    {350^2, PlotCross350sq}, {360^2, PlotCross360sq}, {370^2, PlotCross370sq},
    {380^2, PlotCross380sq}, {390^2, PlotCross390sq}, {400^2, PlotCross400sq},
    {410^2, PlotCross410sq}, {420^2, PlotCross420sq}, {430^2, PlotCross430sq},
    {440^2, PlotCross440sq}, {450^2, PlotCross450sq}, {460^2, PlotCross460sq},
    {470^2, PlotCross470sq}, {480^2, PlotCross480sq}, {490^2, PlotCross490sq}},
  TableHeadings → {None, {"(GeV)^2", "σ(s)"}}]
```

Out[2924]//TableForm=

| $(\text{GeV})^2$ | $\sigma(s)$ |
|---|---|
| 2500 | 0.03565676390122235360000 |
| 3600 | 0.02474134087367976361476 |
| 4900 | 0.01816544752552721655933 |
| 6400 | 0.01390044100357860887621 |
| 8100 | 0.01097807196868900795719 |
| 10 000 | 0.00888875424074629777463 |
| 12 100 | 0.00734355816459758547545 |
| 14 400 | 0.00616875231533417395774 |
| 16 900 | 0.00525478307361363522813 |
| 19 600 | 0.00452979432698426604834 8 |
| 22 500 | 0.00394506948191773590316 2 |
| 25 600 | 0.00346663373701407523070 1 |
| 28 900 | 0.00307020814351512384957 5 |
| 32 400 | 0.00273806940220142759262 8 |
| 36 100 | 0.00245703512348136962094 1 |
| 40 000 | 0.00221713610857387906413 7 |
| 44 100 | 0.00201072040257920438611 6 |
| 48 400 | 0.00183183580328732084807 6 |
| 52 900 | 0.00167579614191224685727 5 |
| 57 600 | 0.00153887138948942939277 0 |
| 62 500 | 0.00141806277630810745559 0 |
| 67 600 | 0.00131093728018656499521 2 |
| 72 900 | 0.00121550422455928011646 8 |
| 78 400 | 0.00113012217323717231983 0 |
| 84 100 | 0.00105342791016036840737 7 |
| 90 000 | 0.00098428171405383109574 1 |
| 96 100 | 0.00092172479127833846643 2 |
| 102 400 | 0.00086494587514648007815 7 |
| 108 900 | 0.00081325480336479634600 2 |
| 115 600 | 0.00076606145550937105435 6 |
| 122 500 | 0.00072285884561864642423 2 |
| 129 600 | 0.00068320945148891785798 7 |
| 136 900 | 0.00064673410300270461019 4 |
| 144 400 | 0.00061310288547132207286 8 |
| 152 100 | 0.00058202765711222724383 2 |
| 160 000 | 0.00055325585951687595329 0 |
| 168 100 | 0.00052656537219317954411 31 |
| 176 400 | 0.00050176021465648297327 66 |
| 184 900 | 0.00047866694019948771104 66 |
| 193 600 | 0.00045713159699323582094 45 |
| 202 500 | 0.00043701715676608984355 89 |
| 211 600 | 0.00041820133061388509022 23 |
| 220 900 | 0.00040057470673660811917 98 |
| 230 400 | 0.00038403915699667398462 51 |
| 240 100 | 0.00036850646884936693220 69 |

In[2925]:=
```
Plot5 = ListPlot[%, AxesLabel → {"(GeV)^2", "σ(s)"}]
```

Out[2925]=



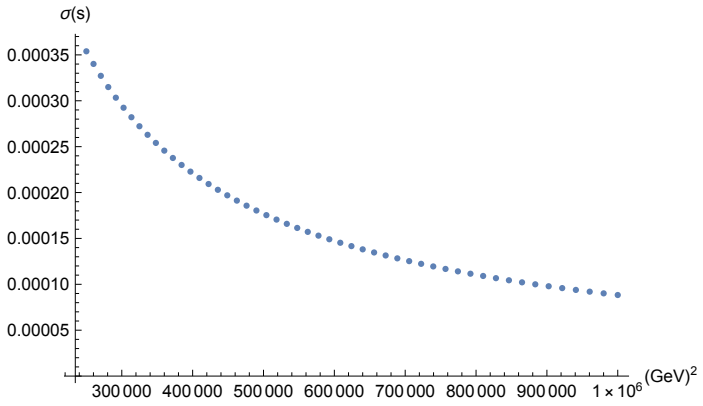

In[2926]:=
```
Table2 =
 TableForm[{{500^2, PlotCross500sq}, {510^2, PlotCross510sq}, {520^2, PlotCross520sq},
   {530^2, PlotCross530sq}, {540^2, PlotCross540sq}, {550^2, PlotCross550sq},
   {560^2, PlotCross560sq}, {570^2, PlotCross570sq}, {580^2, PlotCross580sq},
   {590^2, PlotCross590sq}, {600^2, PlotCross600sq}, {610^2, PlotCross610sq},
   {620^2, PlotCross620sq}, {630^2, PlotCross630sq}, {640^2, PlotCross640sq},
   {650^2, PlotCross650sq}, {660^2, PlotCross660sq}, {670^2, PlotCross670sq},
   {680^2, PlotCross680sq}, {690^2, PlotCross690sq}, {700^2, PlotCross700sq},
   {710^2, PlotCross710sq}, {720^2, PlotCross720sq}, {730^2, PlotCross730sq},
   {740^2, PlotCross740sq}, {750^2, PlotCross750sq}, {760^2, PlotCross760sq},
   {770^2, PlotCross770sq}, {780^2, PlotCross780sq}, {790^2, PlotCross790sq},
   {800^2, PlotCross800sq}, {810^2, PlotCross810sq}, {820^2, PlotCross820sq},
   {830^2, PlotCross830sq}, {840^2, PlotCross840sq}, {850^2, PlotCross850sq},
   {860^2, PlotCross860sq}, {870^2, PlotCross870sq}, {880^2, PlotCross880sq},
   {890^2, PlotCross890sq}, {900^2, PlotCross900sq}, {910^2, PlotCross910sq},
   {920^2, PlotCross920sq}, {930^2, PlotCross930sq}, {940^2, PlotCross940sq},
   {950^2, PlotCross950sq}, {960^2, PlotCross960sq}, {970^2, PlotCross970sq},
   {980^2, PlotCross980sq}, {990^2, PlotCross990sq}, {1000^2, PlotCross1000sq}},
  TableHeadings → {None, {"(GeV)^2", "σ(s)"}}]
```

Out[2926]//TableForm=

| $(\text{GeV})^2$ | $\sigma(s)$ |
|---|---|
| 250 000 | 0.000353897166939617839323 6 |
| 260 100 | 0.000340139494899341299131 6 |
| 270 400 | 0.000327168532931049187140 1 |
| 280 900 | 0.000314925430870756601839 3 |
| 291 600 | 0.000303356739776859468301 1 |
| 302 500 | 0.000292413827841054992974 3 |
| 313 600 | 0.000282052368680137659609 0 |
| 324 900 | 0.000272231891936727984695 5 |
| 336 400 | 0.000262915387666676141715 8 |
| 348 100 | 0.000254068957280102375684 2 |
| 360 000 | 0.000245661504879149221677 3 |
| 372 100 | 0.000237664463736643275912 9 |
| 384 400 | 0.000230051553416797005067 2 |
| 396 900 | 0.000222798563676801478107 4 |
| 409 600 | 0.000215883161827001202929 1 |
| 422 500 | 0.000209284720683909123249 4 |
| 435 600 | 0.000202984164638222650128 8 |
| 448 900 | 0.000196963831690431580831 5 |
| 462 400 | 0.000191207349588795077692 7 |
| 476 100 | 0.000185699524446044080494 9 |
| 490 000 | 0.000180426240418474128789 0 |
| 504 100 | 0.000175374369209404078113 5 |
| 518 400 | 0.000170531688312689006304 5 |
| 532 900 | 0.000165886807044772311136 8 |
| 547 600 | 0.000161429099528731054564 6 |
| 562 500 | 0.000157148643893507812816 5 |
| 577 600 | 0.000153036167038221889899 9 |
| 592 900 | 0.000149082994386963428578 2 |
| 608 400 | 0.000145281004125364103399 6 |
| 624 100 | 0.000141622585467838827328 1 |
| 640 000 | 0.000138100600554837094245 2 |
| 656 100 | 0.000134708349623696316362 3 |
| 672 400 | 0.000131439539135578336820 5 |
| 688 900 | 0.000128288252575200856090 9 |
| 705 600 | 0.000125248923670254578880 4 |
| 722 500 | 0.000122316311804045509003 1 |
| 739 600 | 0.000119485479418469228810 4 |
| 756 900 | 0.000116751771225297439820 3 |
| 774 400 | 0.000114111079506227151611 30 |
| 792 100 | 0.000111558404246943277066 0 |
| 810 000 | 0.000109090681295831100174 4 |
| 828 100 | 0.000106703922889488446844 0 |
| 846 400 | 0.000104394625975702030460 6 |
| 864 900 | 0.000102159474913413990886 5 |
| 883 600 | 0.000099995329569241240097 2 |
| 902 500 | 0.000097899214286772145432 7 |
| 921 600 | 0.000095868307656266767433 4 |
| 940 900 | 0.000093899933019069030805 2 |
| 960 400 | 0.000091991549647042868803 2 |
| 980 100 | 0.000090140744542744513490 1 |
| 1 000 000 | 0.000088345224810905847398 7 |

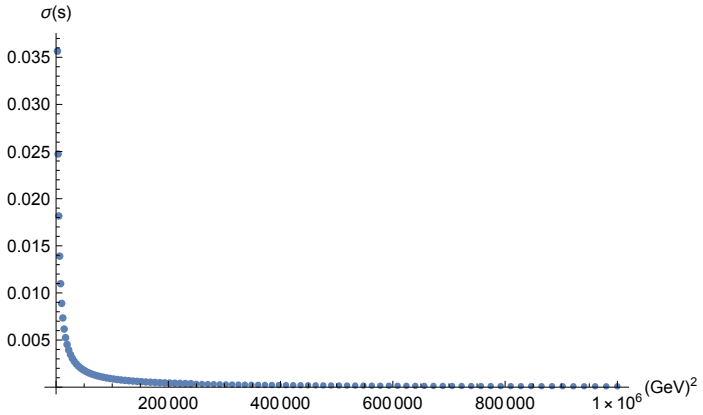
In[2927]:=
```
Plot6 = ListPlot[%, AxesLabel → {"(GeV)^2", "σ(s)"}]
```

Out[2927]=



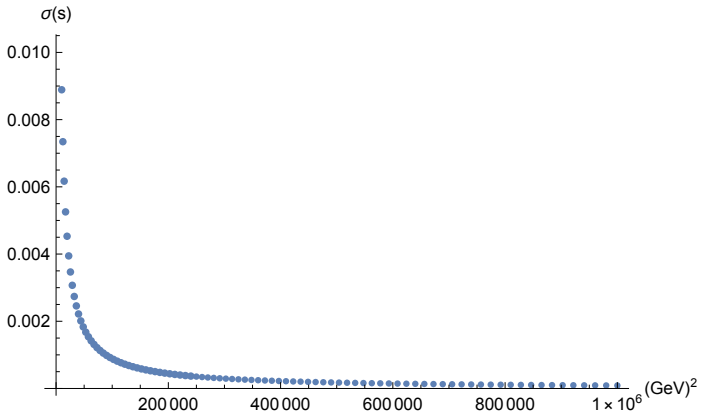

In[2928]:=
```
Show[{Plot5, Plot6}, PlotRange → All]
```

Out[2928]=



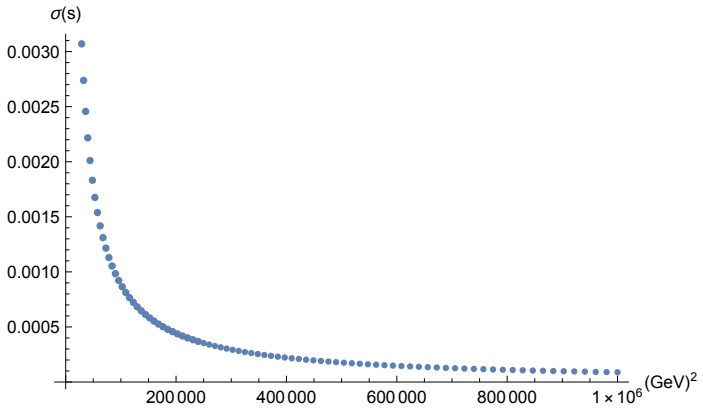

In[2929]:=
```
Show[{Plot5, Plot6}, PlotRange → {{0, 1000^2}, {0, 0.01}}]
```

Out[2929]=



In[2930]:=
```
PlotCross4Loop = Show[{Plot5, Plot6}, PlotRange → {{0, 1000^2}, {0, 0.003}}]
```

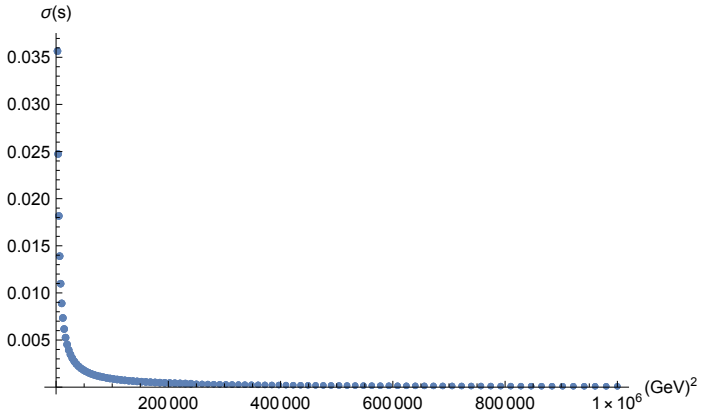
Out[2930]=




# Overlay

In[1736]:=
```
Show[PlotCross2Loop, PlotCross3Loop, PlotCross4Loop, PlotRange → All]
```

Out[1736]=




# Load RunDec

In[541]:=
```
<< ~/Desktop/Software/CRunDec3/RunDec.m
```

```
RunDec: a Mathematica package for running and decoupling of the
        strong coupling and quark masses
by K.G. Chetyrkin, J.H. K\"uhn and M. Steinhauser (January 2000)
by F. Herren and M. Steinhauser (February 2017, v3.0)
```

# Scratch