1 Results

1.1 Case1

Running from 1.0e+03 GeV to 1.0e+04 GeV

C^{duql}_{1111} (Without RGE): Λ_0 = 3.90e+15, WC_0 = 6.57e-32

Set	C^{IC}_{1331} Input		C^{duql}_{1111}				$\Lambda_{\mathrm{SM}}/\Lambda_0$	$\Lambda_{\mathrm{Mix}}/\Lambda_0$
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	$\mathrm{WC}_{\mathrm{SM}}$	Λ_{Mix}	$\mathrm{WC}_{\mathrm{Mix}}$		
Set 1	1e+05	1e-10	5.67e+10	3.11e-22	3.49e+06	8.22e-14	1.5e-05	8.9e-10
Set 2	1e+08	1e-16	5.67e+13	3.11e-28	3.49e+09	8.22e-20	0.015	8.9e-07
Set 3	1e+11	1e-22	4.06e+15	6.06e-32	3.49e+12	8.22e-26	1.0	0.00089
Set 4	1e+14	1e-28	4.07e+15	6.03e-32	2.65e+15	1.42e-31	1.0	0.68

C^{qque}_{1111} (Without RGE): Λ_0 = 5.50e+15, WC_0 = 3.31e-32

Set	C^{IC}_{1331} Input		C^{qque}_{1111}				$\Lambda_{\mathrm{SM}}/\Lambda_0$	$\Lambda_{\mathrm{Mix}}/\Lambda_0$
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	$\mathrm{WC}_{\mathrm{SM}}$	Λ_{Mix}	$\mathrm{WC}_{\mathrm{Mix}}$		
Set 1	1e+05	1e-10	4.02e+10	6.20e-22	2.47e+06	1.64e-13	7.3e-06	4.5e-10
Set 2	1e+08	1e-16	4.02e+13	6.20e-28	2.47e+09	1.64e-19	0.0073	4.5e-07
Set 3	1e+11	1e-22	5.70e+15	3.08e-32	2.47e+12	1.64e-25	1.0	0.00045
Set 4	1e+14	1e-28	5.76e+15	3.02e-32	2.27e+15	1.94e-31	1.0	0.41

C^{qqql}_{1111} (Without RGE): Λ_0 = 3.90e+15, WC_0 = 6.57e-32

Set	C^{IC}_{1331} Input		C^{qqql}_{1111}				$\Lambda_{\mathrm{SM}}/\Lambda_0$	$\Lambda_{\mathrm{Mix}}/\Lambda_0$
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	$\mathrm{WC}_{\mathrm{SM}}$	Λ_{Mix}	$\mathrm{WC}_{\mathrm{Mix}}$		
Set 1	1e+05	1e-10	4.17e+15	5.76e-32	5.52e+05	3.29e-12	1.1	1.4e-10
Set 2	1e+08	1e-16	4.19e+15	5.70e-32	5.52e+08	3.29e-18	1.1	1.4e-07
Set 3	1e+11	1e-22	4.19e+15	5.70e-32	5.52e+11	3.29e-24	1.1	0.00014
Set 4	1e+14	1e-28	4.19e+15	5.70e-32	5.47e+14	3.34e-30	1.1	0.14

C^{duue}_{1111} (Without RGE): Λ_0 = 3.90e+15, WC_0 = 6.57e-32

Set	C^{IC}_{1331} Input		C^{duue}_{1111}				$\Lambda_{\mathrm{SM}}/\Lambda_0$	$\Lambda_{\mathrm{Mix}}/\Lambda_0$
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	$\mathrm{WC}_{\mathrm{SM}}$	Λ_{Mix}	$\mathrm{WC}_{\mathrm{Mix}}$		
Set 1	1e+05	1e-10	4.15e+15	5.80e-32	8.22e+06	1.48e-14	1.1	2.1e-09
Set 2	1e+08	1e-16	4.05e+15	6.10e-32	8.22e+09	1.48e-20	1.0	2.1e-06
Set 3	1e+11	1e-22	4.05e+15	6.10e-32	8.22e+12	1.48e-26	1.0	0.0021
Set 4	1e+14	1e-28	4.05e+15	6.10e-32	3.63e+15	7.58e-32	1.0	0.93

1.2 Case2

Running from 1.0e+03 GeV to 1.0e+06 GeV

C^{duql}_{1111} (Without RGE): Λ_0 = 3.90e+15, WC_0 = 6.57e-32

Set	C^{IC}_{1331} Input		C^{duql}_{1111}				Λ_{SM}/Λ_0	Λ_{Mix}/Λ_0
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	WC_{SM}	Λ_{Mix}	WC_{Mix}		
Set 1	1e+07	1e-14	4.13e+12	-5.86e-26	4.75e+10	4.43e-22	0.0011	1.2e-05
Set 2	1e+09	1e-18	4.15e+14	-5.80e-30	4.75e+12	4.43e-26	0.11	0.0012
Set 3	1e+11	1e-22	4.40e+15	5.16e-32	4.72e+14	4.48e-30	1.1	0.12
Set 4	1e+13	1e-26	4.38e+15	5.21e-32	4.36e+15	5.26e-32	1.1	1.1

C^{qque}_{1111} (Without RGE): Λ_0 = 5.50e+15, WC_0 = 3.31e-32

Set	C^{IC}_{1331} Input		C^{qque}_{1111}				Λ_{SM}/Λ_0	Λ_{Mix}/Λ_0
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	WC_{SM}	Λ_{Mix}	WC_{Mix}		
Set 1	1e+07	1e-14	2.94e+12	-1.16e-25	3.38e+10	8.76e-22	0.00053	6.1e-06
Set 2	1e+09	1e-18	2.94e+14	-1.16e-29	3.38e+12	8.76e-26	0.053	0.00061
Set 3	1e+11	1e-22	6.35e+15	2.48e-32	3.37e+14	8.79e-30	1.2	0.061
Set 4	1e+13	1e-26	6.21e+15	2.59e-32	6.11e+15	2.68e-32	1.1	1.1

C^{qqql}_{1111} (Without RGE): Λ_0 = 3.90e+15, WC_0 = 6.57e-32

Set	C^{IC}_{1331} Input		C^{qqql}_{1111}				Λ_{SM}/Λ_0	Λ_{Mix}/Λ_0
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	WC_{SM}	Λ_{Mix}	WC_{Mix}		
Set 1	1e+07	1e-14	4.74e+15	4.45e-32	1.22e+10	6.70e-21	1.2	3.1e-06
Set 2	1e+09	1e-18	4.74e+15	4.45e-32	1.22e+12	6.70e-25	1.2	0.00031
Set 3	1e+11	1e-22	4.74e+15	4.45e-32	1.22e+14	6.71e-29	1.2	0.031
Set 4	1e+13	1e-26	4.74e+15	4.45e-32	4.42e+15	5.12e-32	1.2	1.1

C^{duue}_{1111} (Without RGE): Λ_0 = 3.90e+15, WC_0 = 6.57e-32

Set	C^{IC}_{1331} Input		C^{duue}_{1111}				Λ_{SM}/Λ_0	Λ_{Mix}/Λ_0
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	WC_{SM}	Λ_{Mix}	WC_{Mix}		
Set 1	1e+07	1e-14	4.31e+15	5.39e-32	3.96e+10	6.38e-22	1.1	1e-05
Set 2	1e+09	1e-18	4.31e+15	5.39e-32	3.96e+12	6.38e-26	1.1	0.001
Set 3	1e+11	1e-22	4.31e+15	5.39e-32	3.94e+14	6.43e-30	1.1	0.1
Set 4	1e+13	1e-26	4.31e+15	5.39e-32	4.28e+15	5.46e-32	1.1	1.1

1.3 Case3

Running from 1.0e+03 GeV to 1.0e+09 GeV

C^{duql}_{1111} (Without RGE): Λ_0 = 3.90e+15, WC_0 = 6.57e-32

Set	C^{IC}_{1331} Input		C^{duql}_{1111}				$\Lambda_{\mathrm{SM}}/\Lambda_0$	$\Lambda_{\mathrm{Mix}}/\Lambda_0$
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	$\mathrm{WC}_{\mathrm{SM}}$	Λ_{Mix}	$\mathrm{WC}_{\mathrm{Mix}}$		
Set 1	5e+09	4e-20	1.87e+15	-2.87e-31	1.87e+15	-2.85e-31	0.48	0.48
Set 2	1e+10	1e-20	5.08e+15	-3.88e-32	5.11e+15	-3.83e-32	1.3	1.3
Set 3	5e+10	4e-22	4.97e+15	4.05e-32	4.97e+15	4.05e-32	1.3	1.3
Set 4	1e+11	1e-22	4.82e+15	4.30e-32	4.82e+15	4.30e-32	1.2	1.2

C^{qque}_{1111} (Without RGE): Λ_0 = 5.50e+15, WC_0 = 3.31e-32

Set	C^{IC}_{1331} Input		C^{qque}_{1111}				$\Lambda_{\mathrm{SM}}/\Lambda_0$	$\Lambda_{\mathrm{Mix}}/\Lambda_0$
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	$\mathrm{WC}_{\mathrm{SM}}$	Λ_{Mix}	$\mathrm{WC}_{\mathrm{Mix}}$		
Set 1	5e+09	4e-20	1.27e+15	-6.25e-31	1.27e+15	-6.20e-31	0.23	0.23
Set 2	1e+10	1e-20	2.67e+15	-1.40e-31	2.68e+15	-1.39e-31	0.49	0.49
Set 3	5e+10	4e-22	8.15e+15	1.51e-32	8.13e+15	1.51e-32	1.5	1.5
Set 4	1e+11	1e-22	7.09e+15	1.99e-32	7.08e+15	1.99e-32	1.3	1.3

C^{qqql}_{1111} (Without RGE): Λ_0 = 3.90e+15, WC_0 = 6.57e-32

Set	C^{IC}_{1331} Input		C^{qqql}_{1111}				$\Lambda_{\mathrm{SM}}/\Lambda_0$	$\Lambda_{\mathrm{Mix}}/\Lambda_0$
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	$\mathrm{WC}_{\mathrm{SM}}$	Λ_{Mix}	$\mathrm{WC}_{\mathrm{Mix}}$		
Set 1	5e+09	4e-20	5.55e+15	3.24e-32	3.66e+15	7.46e-32	1.4	0.94
Set 2	1e+10	1e-20	5.55e+15	3.24e-32	4.82e+15	4.30e-32	1.4	1.2
Set 3	5e+10	4e-22	5.55e+15	3.24e-32	5.52e+15	3.29e-32	1.4	1.4
Set 4	1e+11	1e-22	5.55e+15	3.24e-32	5.54e+15	3.25e-32	1.4	1.4

C^{duue}_{1111} (Without RGE): Λ_0 = 3.90e+15, WC_0 = 6.57e-32

Set	C^{IC}_{1331} Input		C^{duue}_{1111}				$\Lambda_{\mathrm{SM}}/\Lambda_0$	$\Lambda_{\mathrm{Mix}}/\Lambda_0$
			SM Only		BNV–BNC Mixing			
	Λ	WC	Λ_{SM}	$\mathrm{WC}_{\mathrm{SM}}$	Λ_{Mix}	$\mathrm{WC}_{\mathrm{Mix}}$		
Set 1	5e+09	4e-20	4.64e+15	4.64e-32	4.41e+15	5.14e-32	1.2	1.1
Set 2	1e+10	1e-20	4.64e+15	4.64e-32	4.58e+15	4.77e-32	1.2	1.2
Set 3	5e+10	4e-22	4.64e+15	4.64e-32	4.64e+15	4.65e-32	1.2	1.2
Set 4	1e+11	1e-22	4.64e+15	4.64e-32	4.64e+15	4.64e-32	1.2	1.2

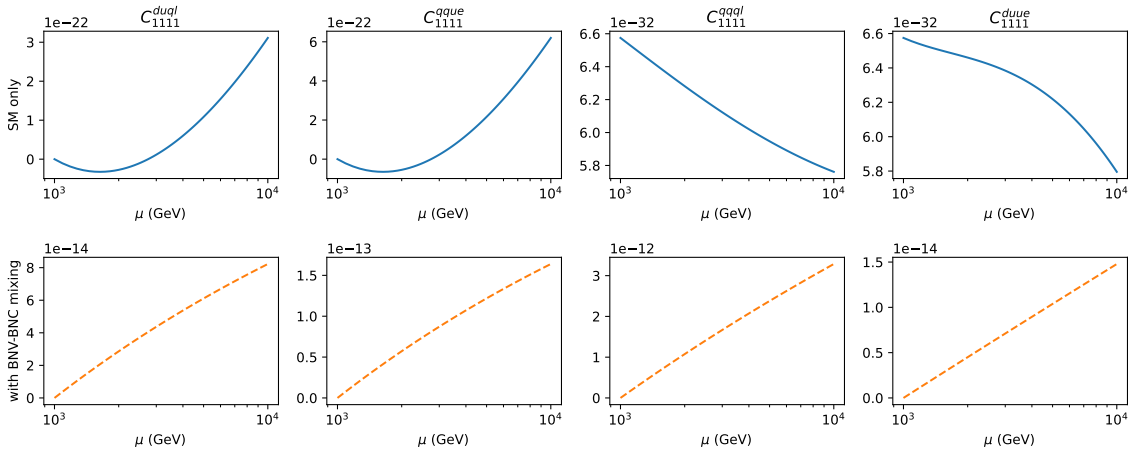

Figure 1: Running of Wilson Coefficients for Case 1

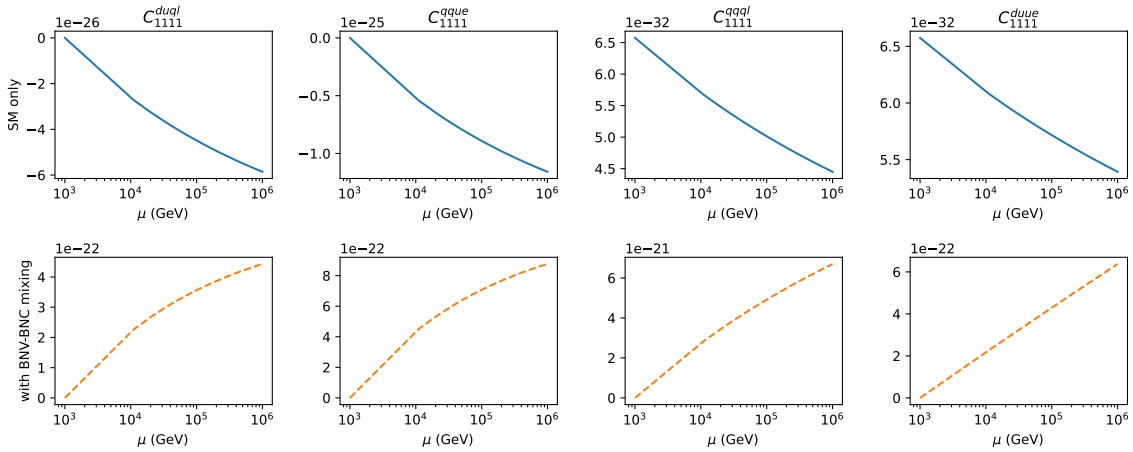

Figure 2: Running of Wilson Coefficients for Case 2

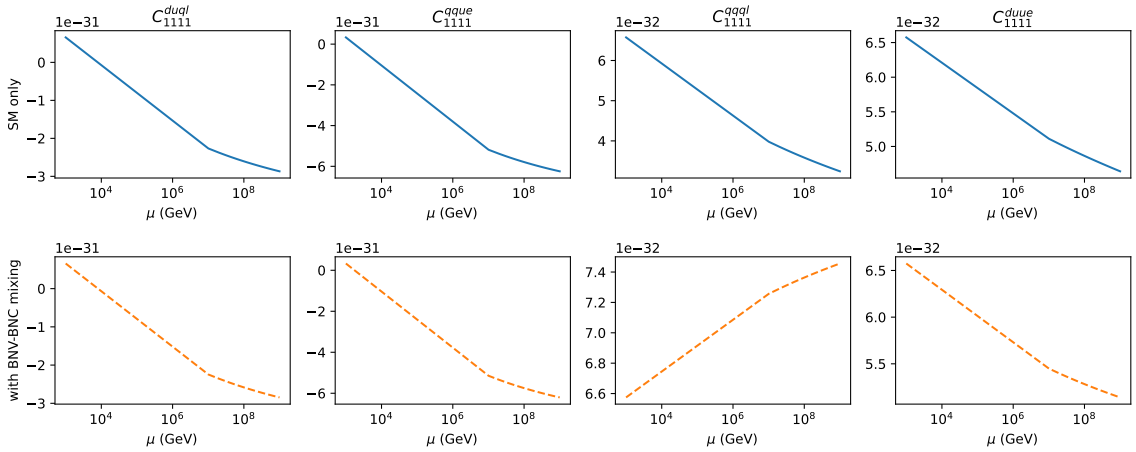

Figure 3: Running of Wilson Coefficients for Case 3

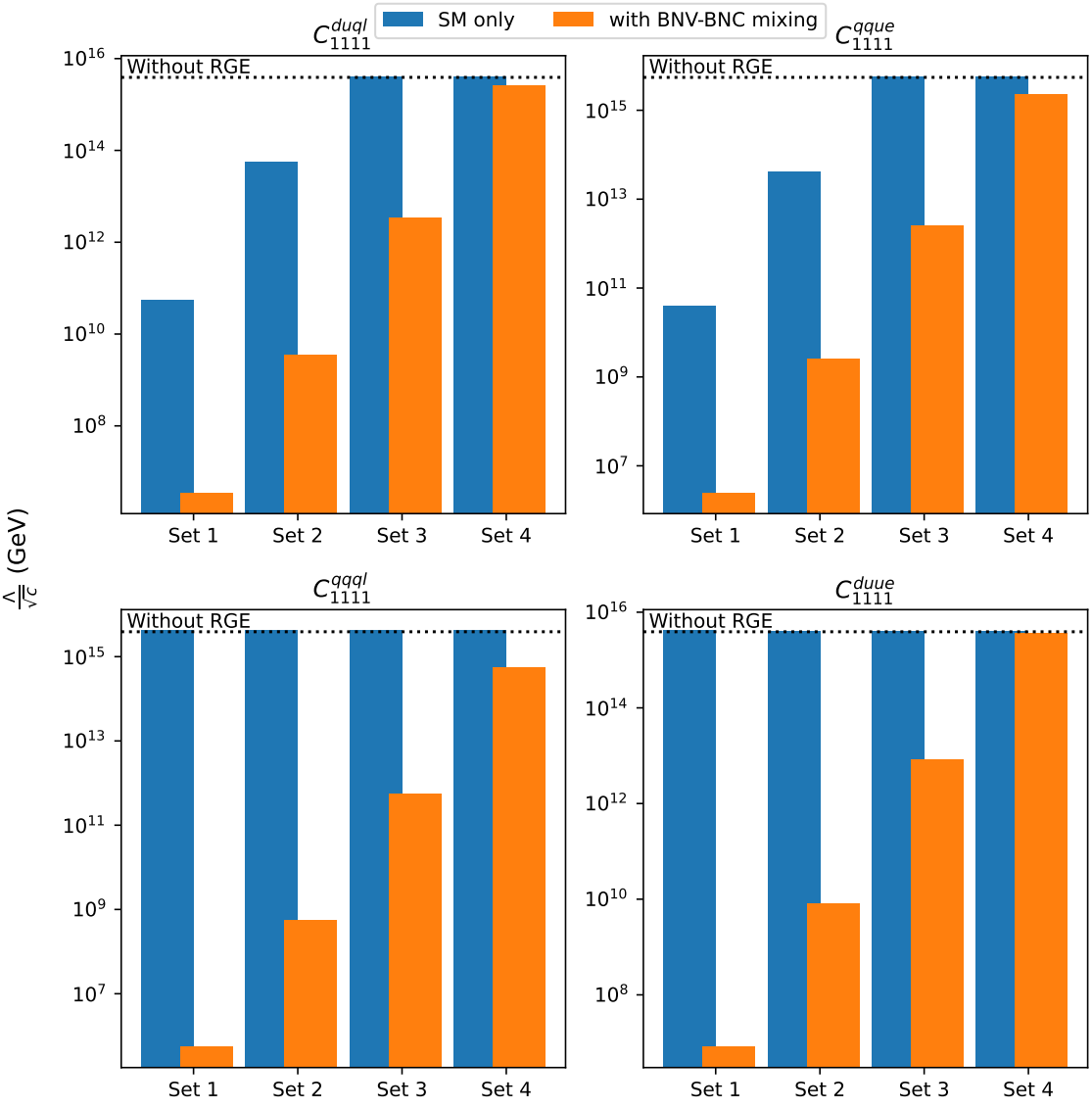

Figure 4: Comparison of Λ values for Case 1

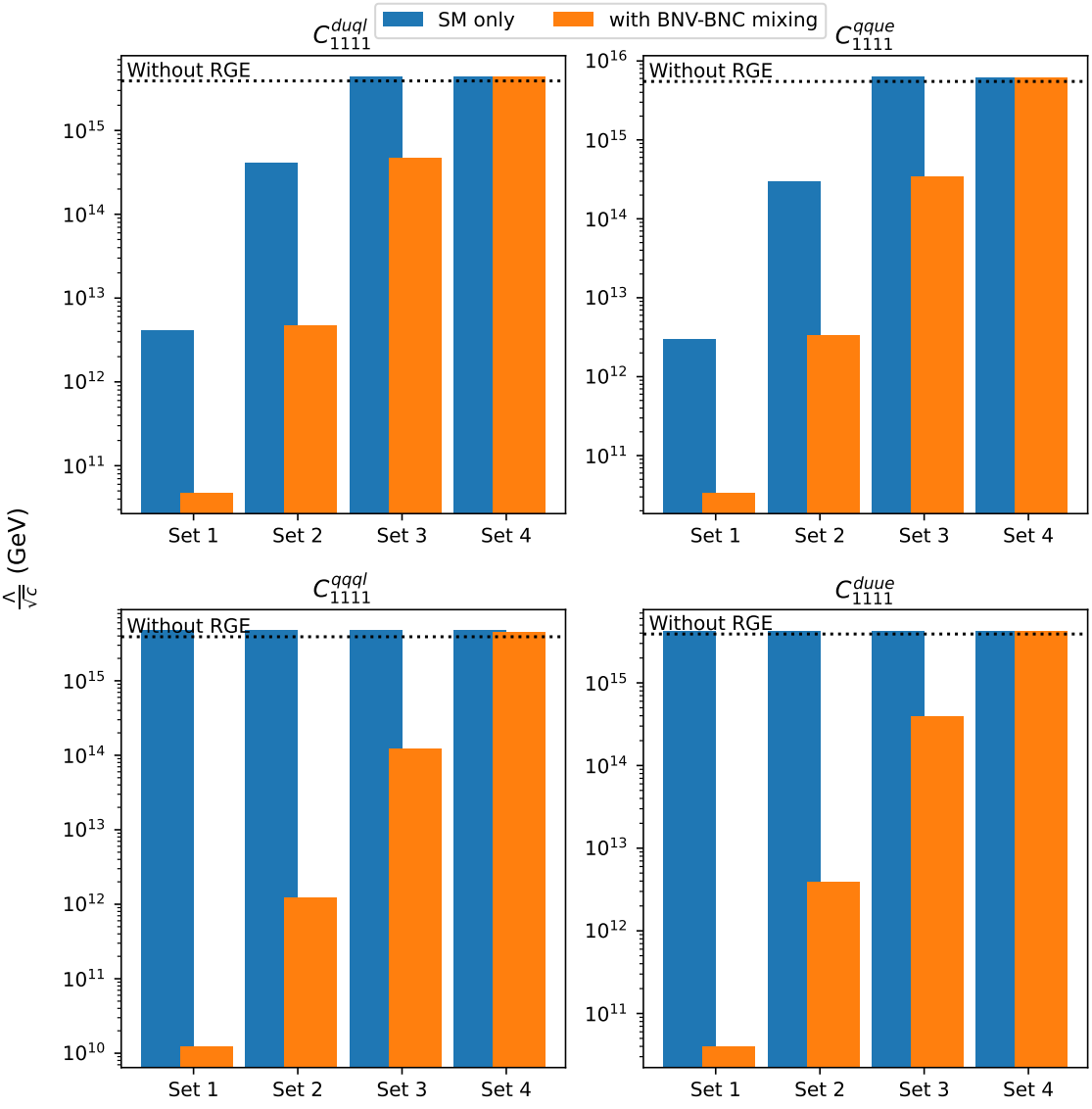

Figure 5: Comparison of Λ values for Case 2

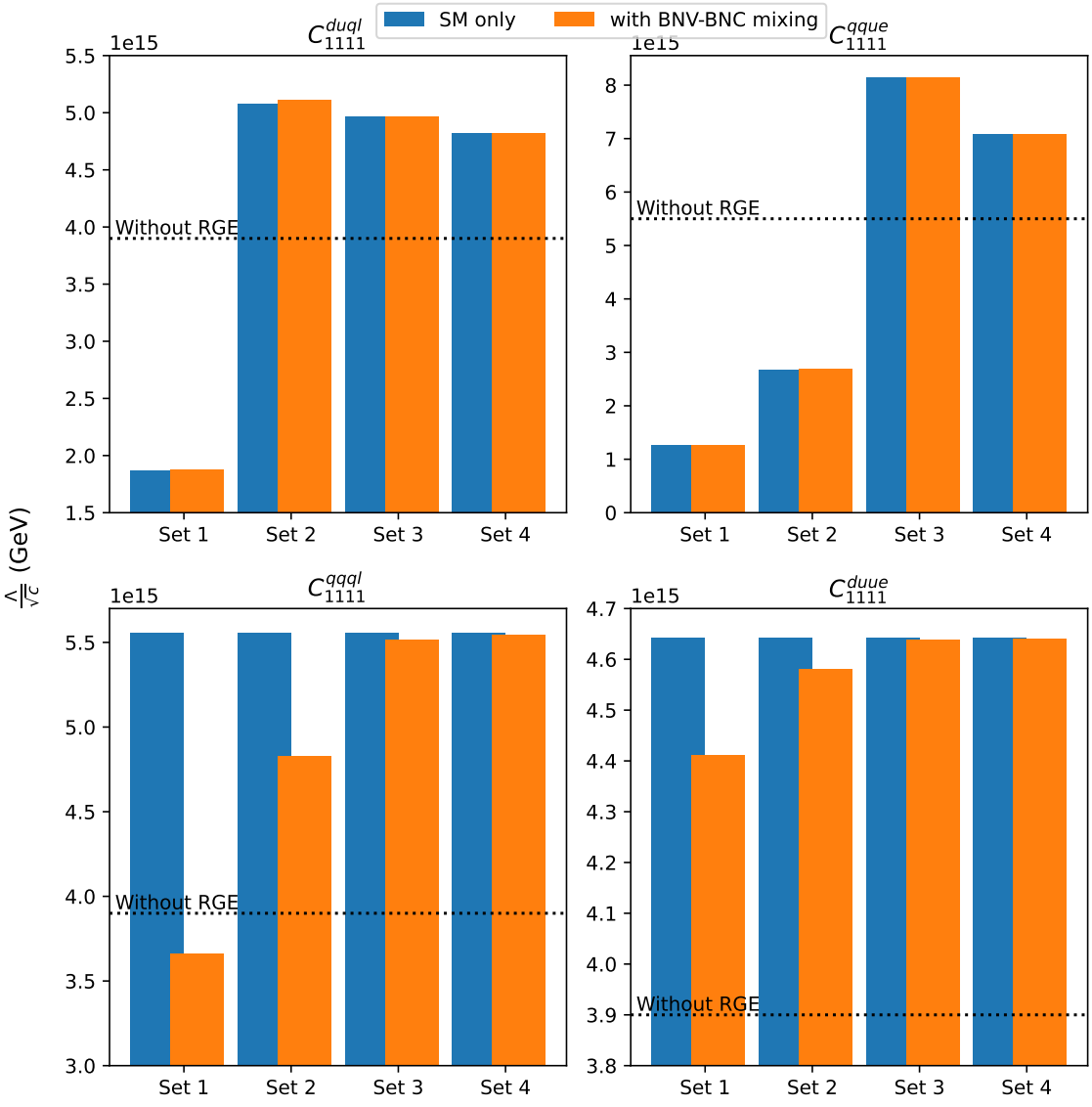

Figure 6: Comparison of Λ values for Case 3