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Extraction of the strong coupling constant (α_s) from photon structure function (F_2^γ) measurements with NNLO evolution

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Abstract: Place for Abstract.

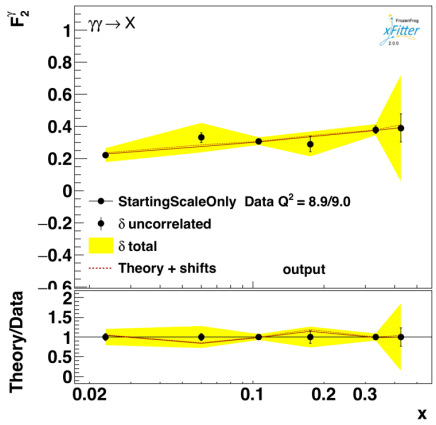
Keywords: QCD, NLO Computations, LHC, Top Quark

Contents

1 Experimental data

Something about data

F_2^γ *data set*	Ref.	*Number of data points*	$Q^2_{min}/[\mathrm{GeV}^2]$	$Q^2_{max}/[\mathrm{GeV}^2]$	x_{min}	x_{max}
Lep L3 1998	[1]	24	1.9	5.0	0.0035	0.15
Lep L3 1999	[2]	11	10.8	23.1	0.055	0.4
Lep L3 2000	[3]	17	60.0	225.0	0.13	0.89
Lep L3 2005	[4]	10	12.5	12.5	0.013	0.36
Lep OPAL 1994	[5]	7	5.9	14.7	0.046	0.679
Lep OPAL 1997 1	[6]	10	7.5	135.0	0.046	0.679
Lep OPAL 1997 2	[7]	21	9.0	59	0.075	0.7
Lep OPAL 1997 3	[8]	8	1.86	3.76	0.004	0.141
Lep OPAL 2000	[9]	22	1.9	17.8	0.0012	0.3945
Lep OPAL 2002	[22]	12	12.1	780	0.175	0.725
Lep ALEPH 1999	[10]	11	9.9	284	0.039	0.54
Lep ALEPH 1999	[11]	16	17.3	67.2	0.065	0.8478
Lep DELPHI 1996	[12]	7	12.0	12.0	0.0405	0.2335
KEK-TRISTAN-AMY 1990	[13]	6	73.0	73.0	0.25	0.75
KEK-TRISTAN-AMY 1995	[14]	5	73.0	390	0.25	0.75
KEK-TRISTAN-AMY 1997	[15]	3	6.8	6.8	0.07	0.5
KEK-TRISTAN-TOPAZ 1994	[16]	8	5.1	80.0	0.043	0.785
DESY-PETRA-CELLO 1983	[17]	5	4.0	20.0	0.6	0.6
DESY-PETRA-TASSO 1986	[18]	5	23.0	23.0	0.11	0.9
DESY-PETRA-JADE 1983	[19]	8	24.0	100.0	0.05	0.75
DESY-PETRA-JADE 1984	[23]	15	2.4	5.3	0.05	0.75
DESY-PETRA-PLUTO 1984	[19]	15	2.4	9.2	0.063	0.72
DESY-PETRA-PLUTO 1987	[19]	4	45.0	45.0 F2+charm	0.175	0.825
SLAC-PEP-TPC/2-GAMMA 1987 1	[20]	22	0.24	5.1	0.01	0.55
SLAC-PEP-TPC/2-GAMMA 1987 2	[21]	19	0.24	5.2	0.07	0.16 Error!


F_2^γ
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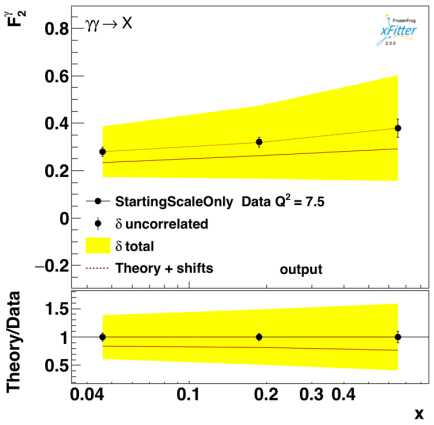
StartingScaleOnly Data Q^2 = 8.9/9.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x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$\gamma\gamma \to X$
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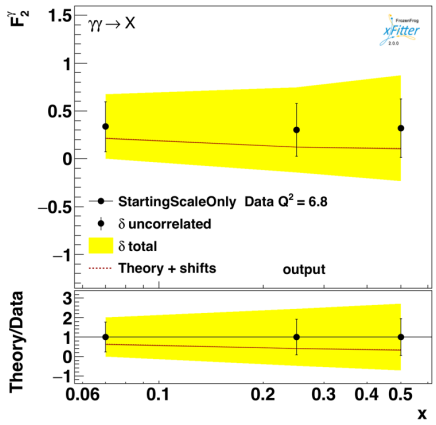
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
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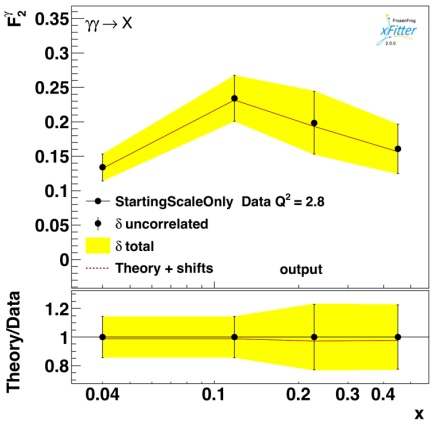
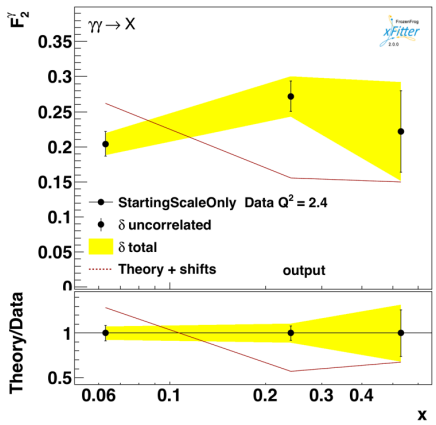
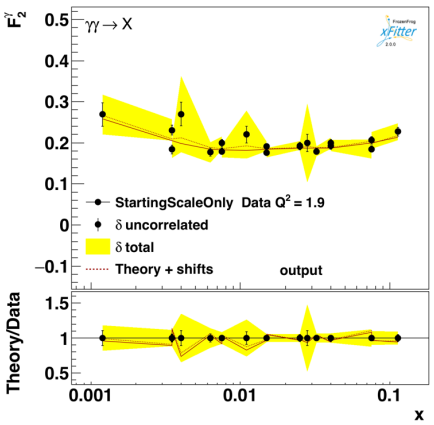
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 2.8
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 2.4
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x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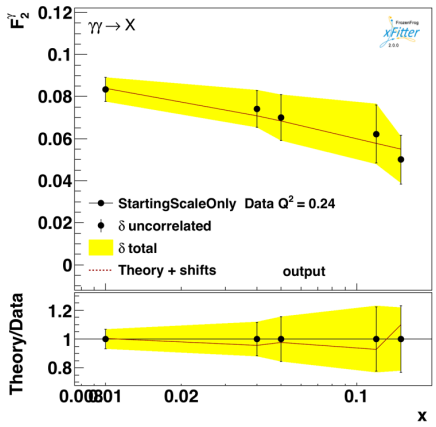
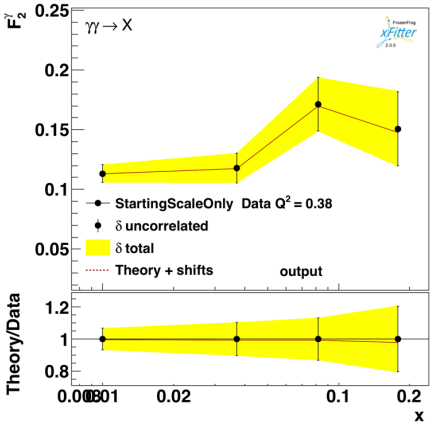
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 0.24
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x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xFitter
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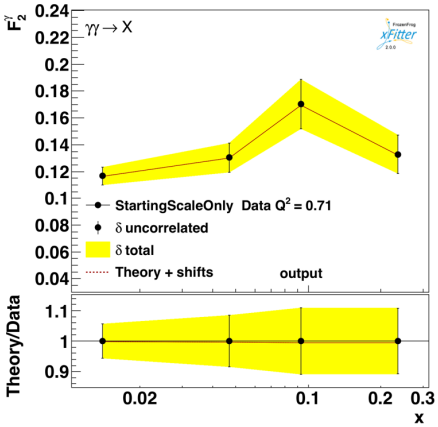
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x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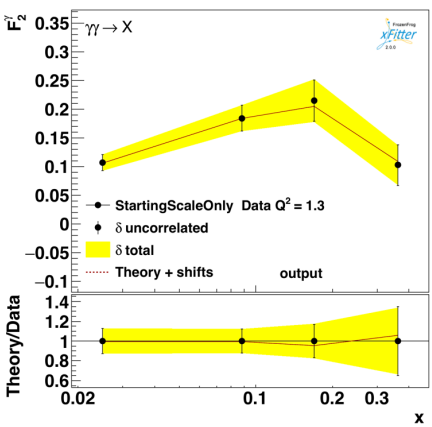
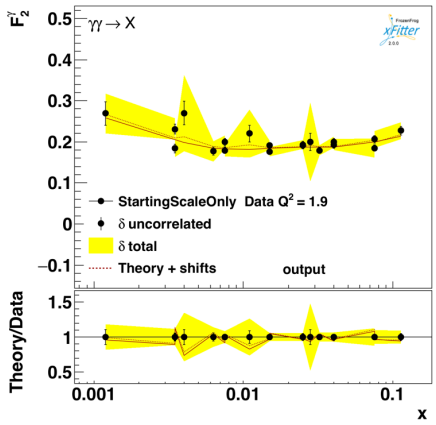
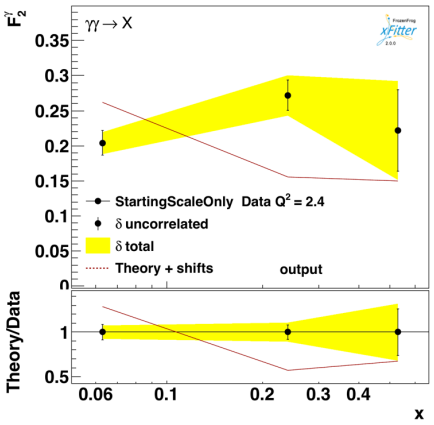
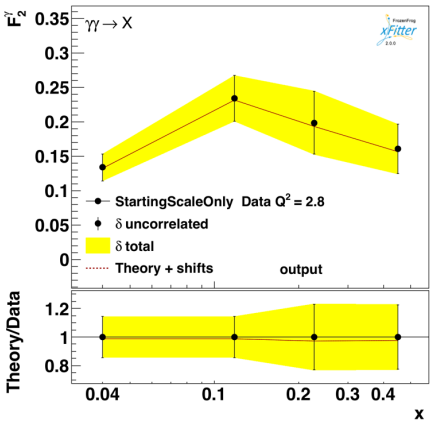
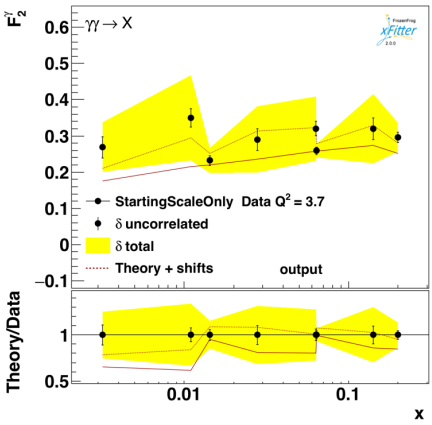
xFitter
StartingScaleOnly Data Q^2 = 0.71
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

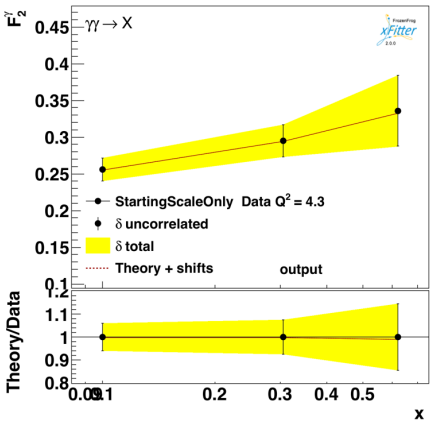

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 1.3
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

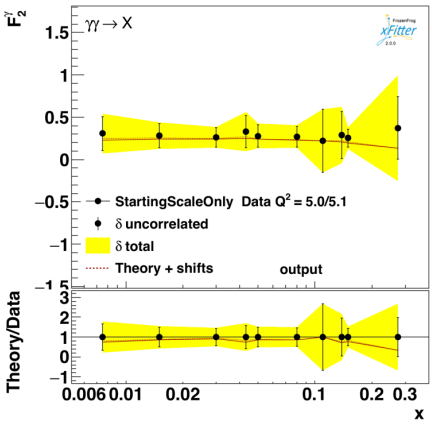

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 1.9
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

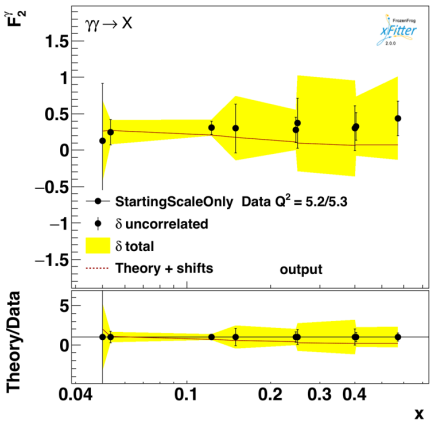

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 2.4
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

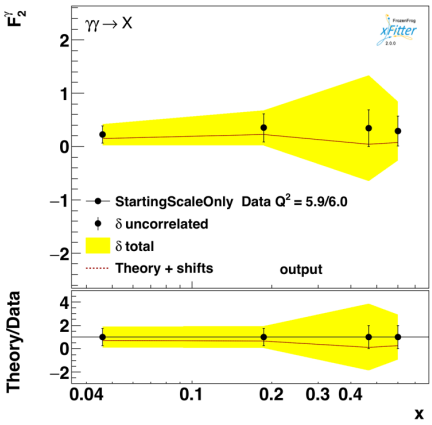

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 2.8
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

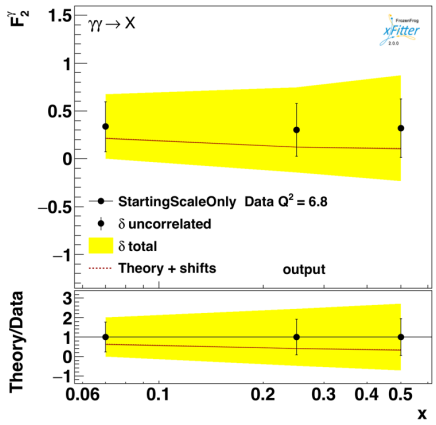

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 3.7
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

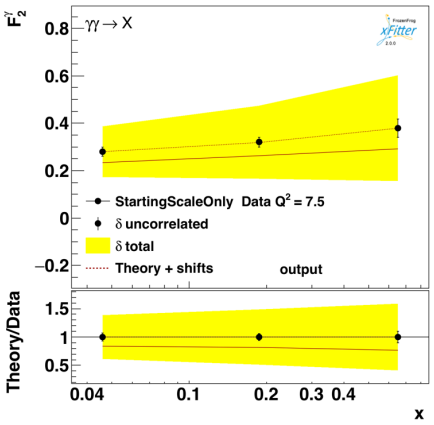

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 4.3
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

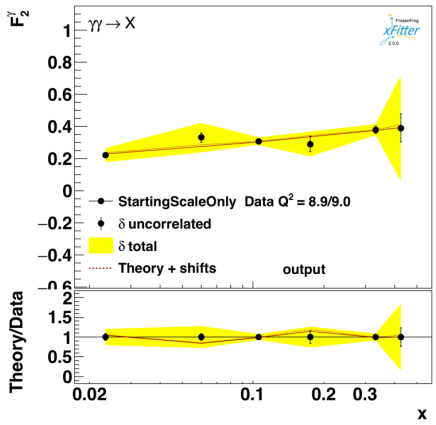

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 5.0/5.1
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

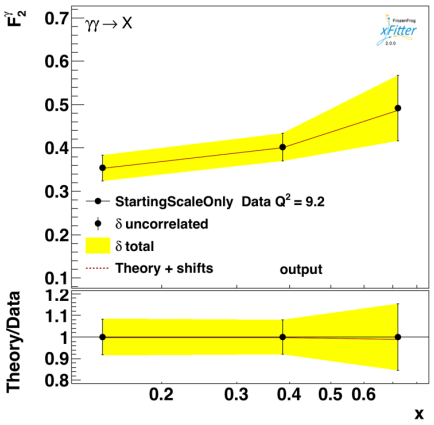

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 5.2/5.3
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 5.9/6.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 6.8
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 7.5
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 8.9/9.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
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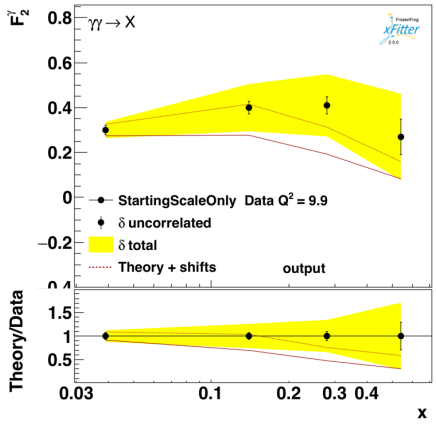
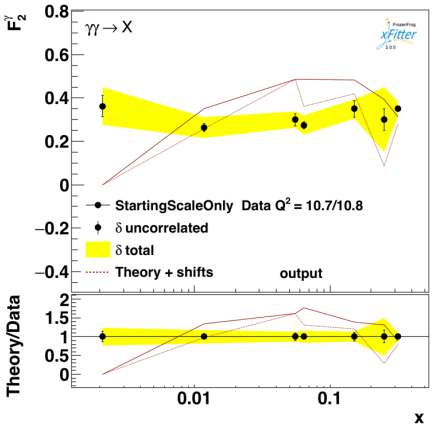
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 9.9
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
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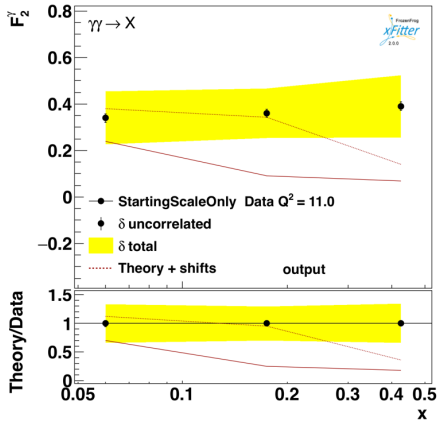
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x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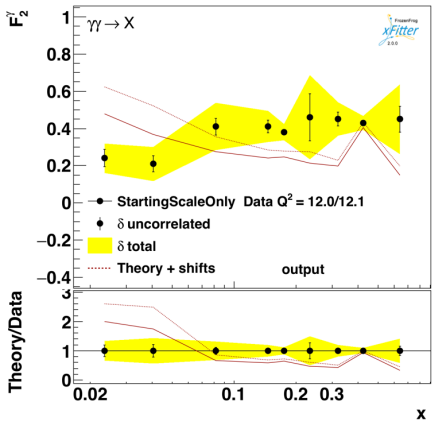
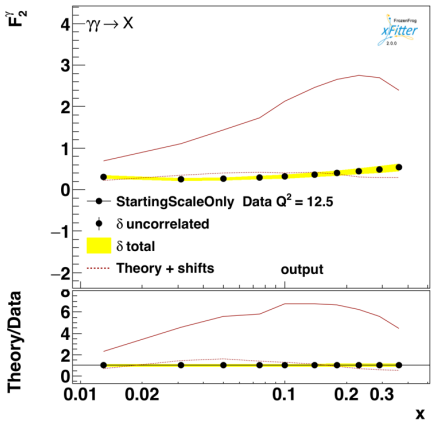
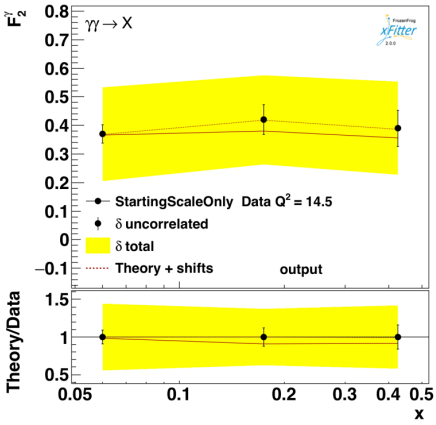
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 12.0/12.1
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 12.5
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
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xFitter
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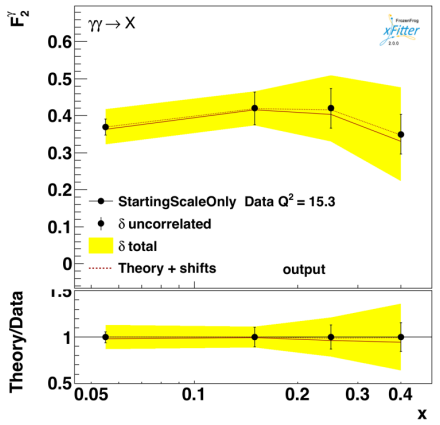
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x


F_2^γ
$\gamma\gamma \to X$
xFitter
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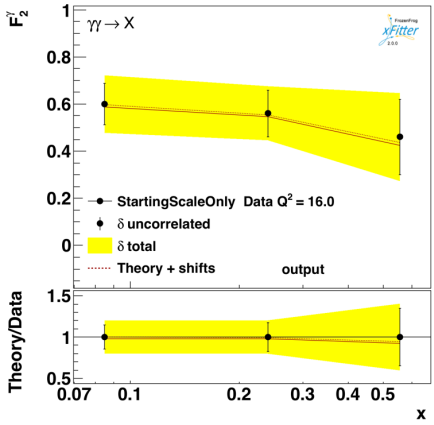
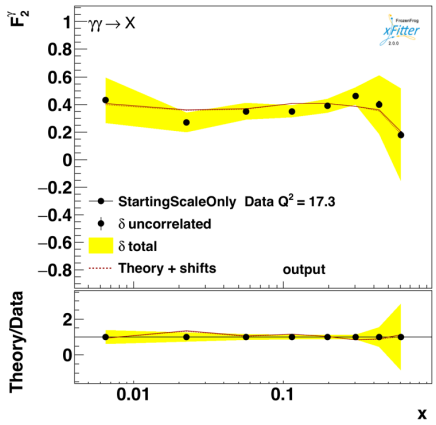
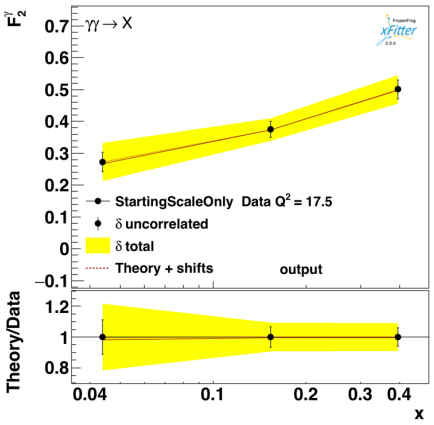
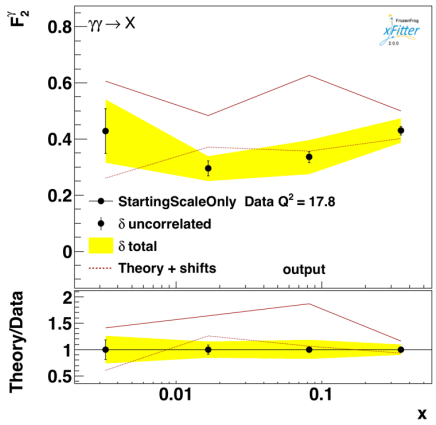
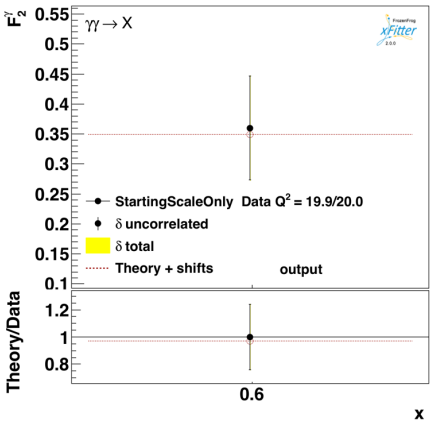
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

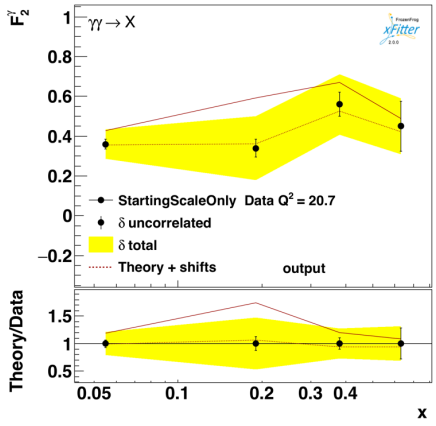

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 16.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

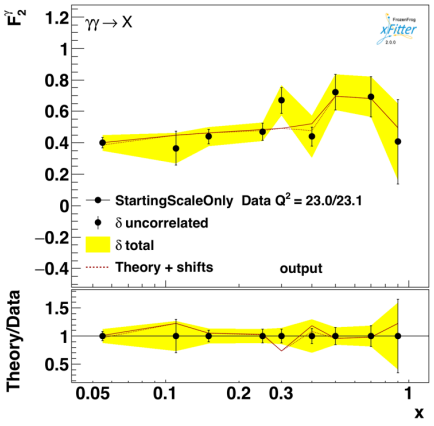

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 17.3
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

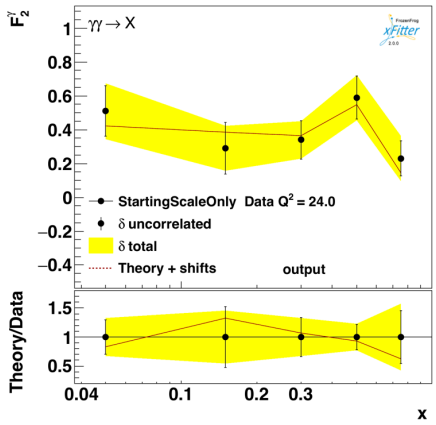

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 17.5
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

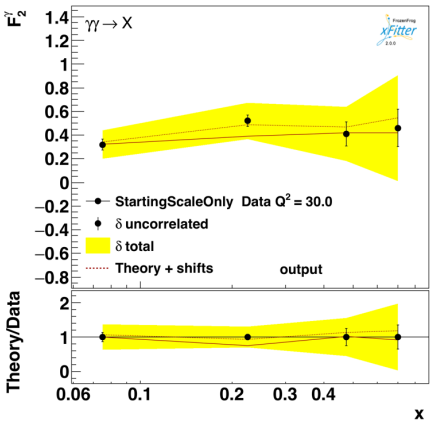

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 17.8
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

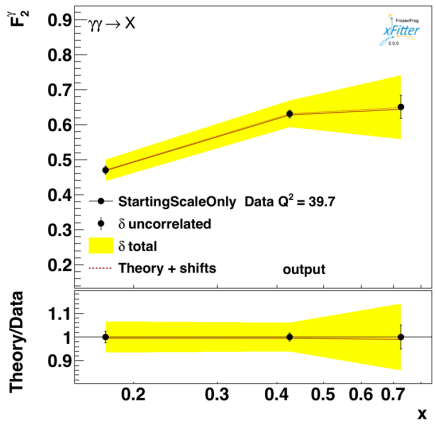

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 19.9/20.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

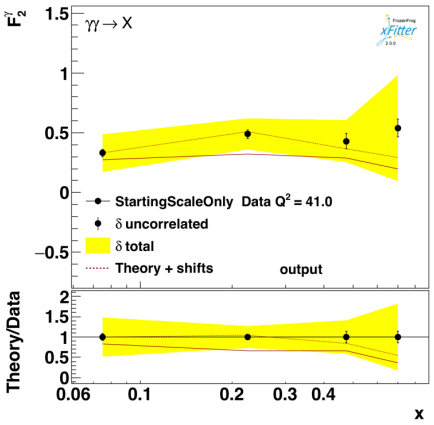

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 20.7
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

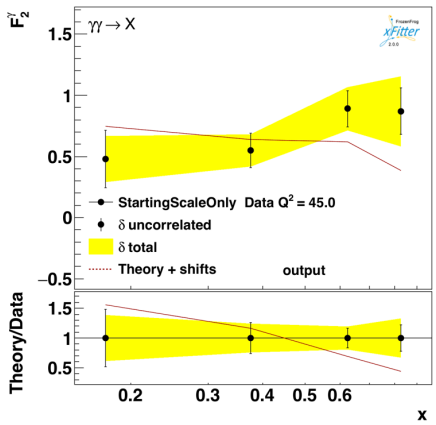

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 23.0/23.1
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

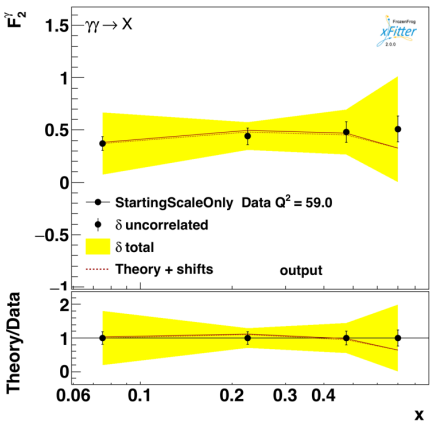

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 24.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

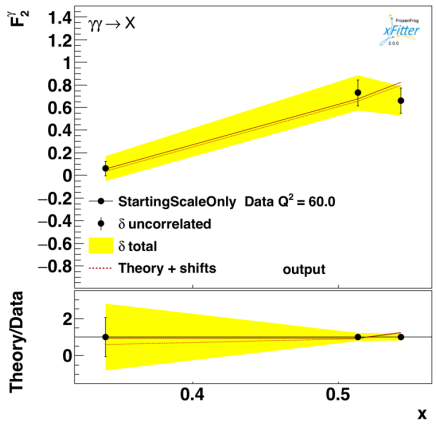

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 30.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

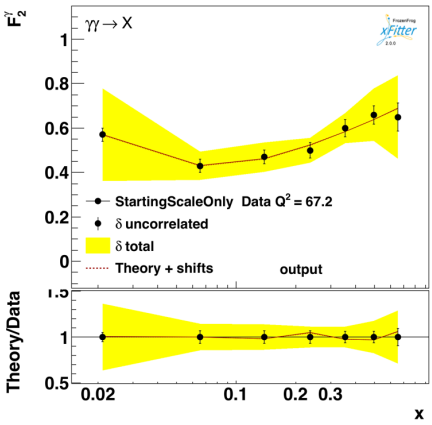

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 39.7
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

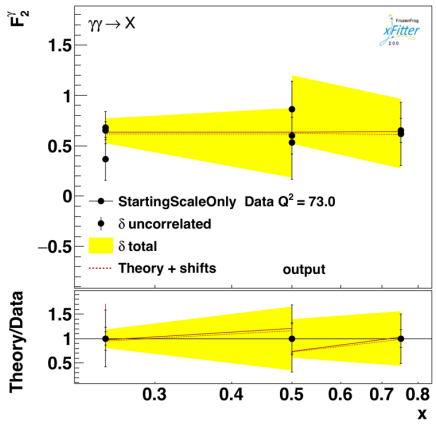

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 41.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

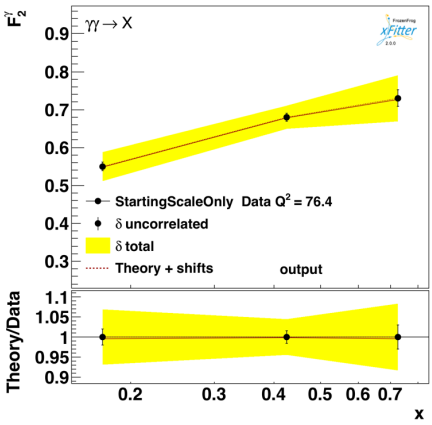

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 45.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

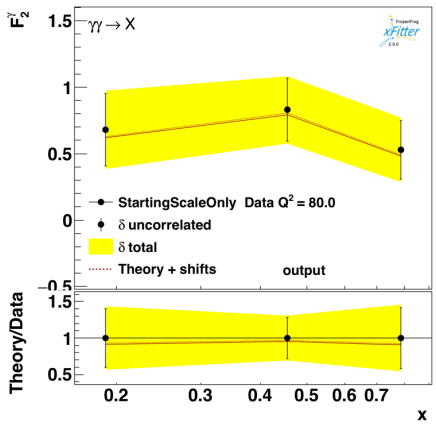

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 59.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

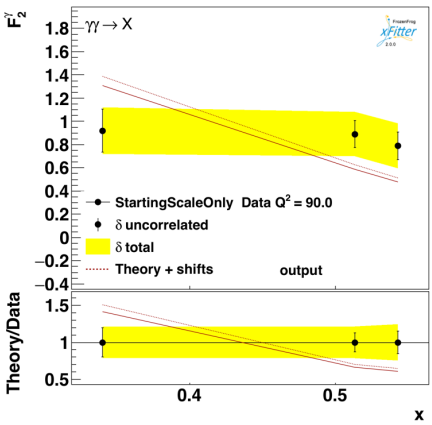

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 60.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

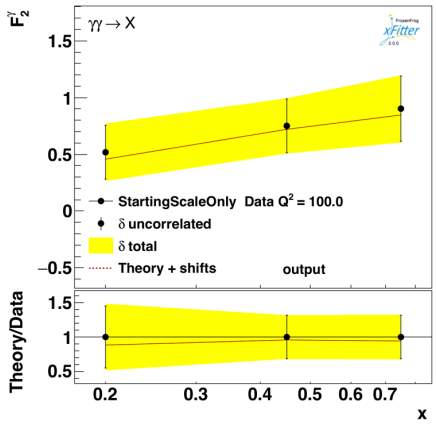

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 67.2
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

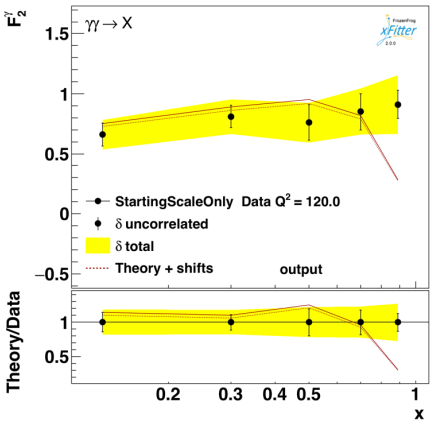

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 73.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

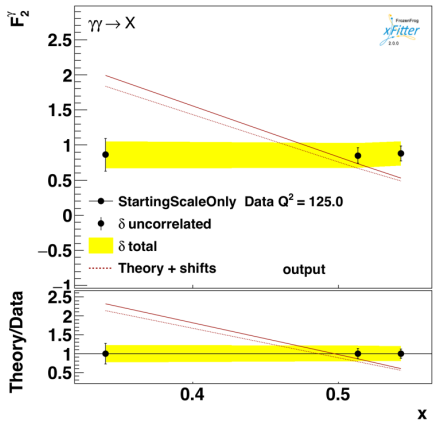

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 76.4
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

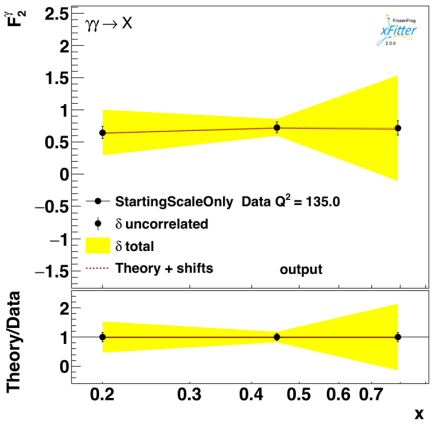

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 80.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

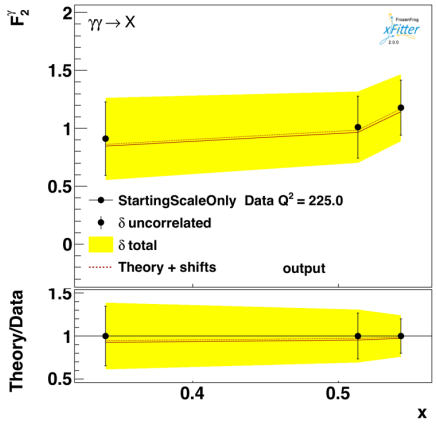

F_2^γ
$\gamma\gamma \to X$
xFitter
StartingScaleOnly Data Q^2 = 90.0
δ uncorrelated
δ total
Theory + shifts
output
Theory/Data
x

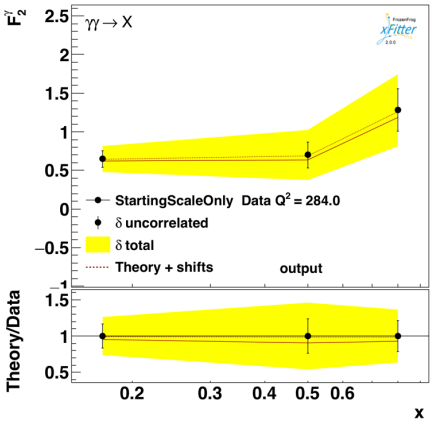

$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 100.0
δ uncorrelated
δ total
Theory + shifts
output
F_2^γ
Theory/Data
x

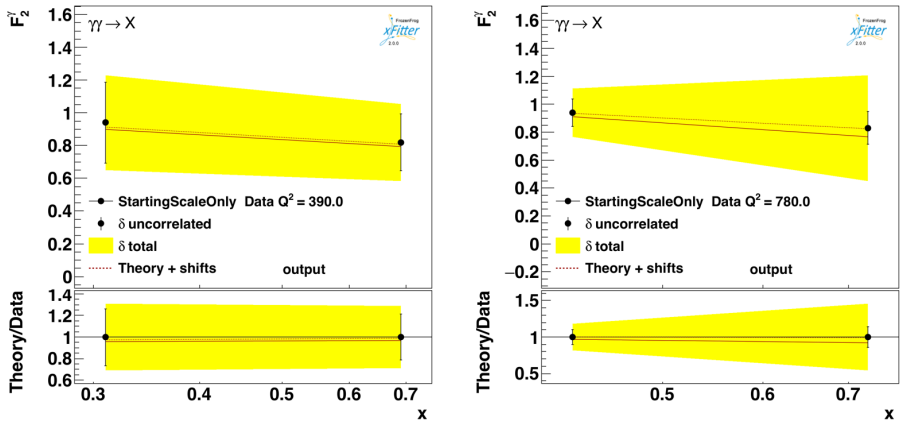

$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 120.0
δ uncorrelated
δ total
Theory + shifts
output
F_2^γ
Theory/Data
x


$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 125.0
δ uncorrelated
δ total
Theory + shifts
output
F_2^γ
Theory/Data
x


$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 135.0
δ uncorrelated
δ total
Theory + shifts
output
F_2^γ
Theory/Data
x


$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 225.0
δ uncorrelated
δ total
Theory + shifts
output
F_2^γ
Theory/Data
x


$\gamma\gamma \to X$
StartingScaleOnly Data Q^2 = 284.0
δ uncorrelated
δ total
Theory + shifts
output
F_2^γ
Theory/Data
x



Acknowledgements

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