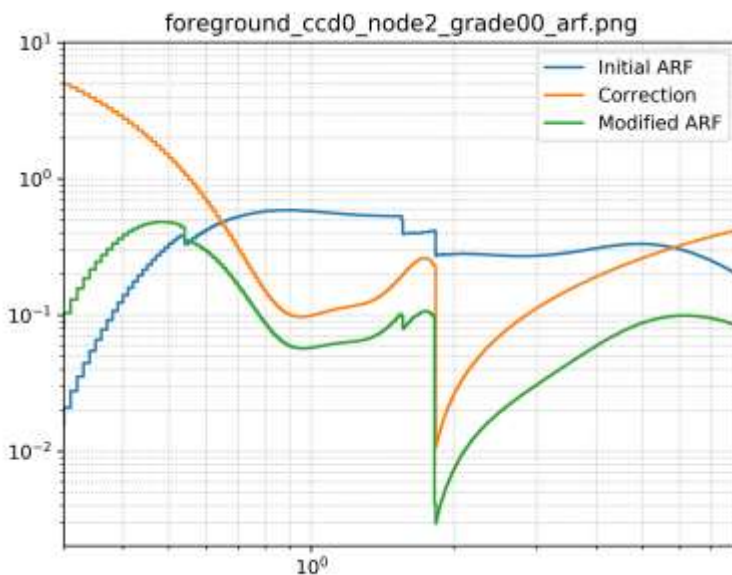
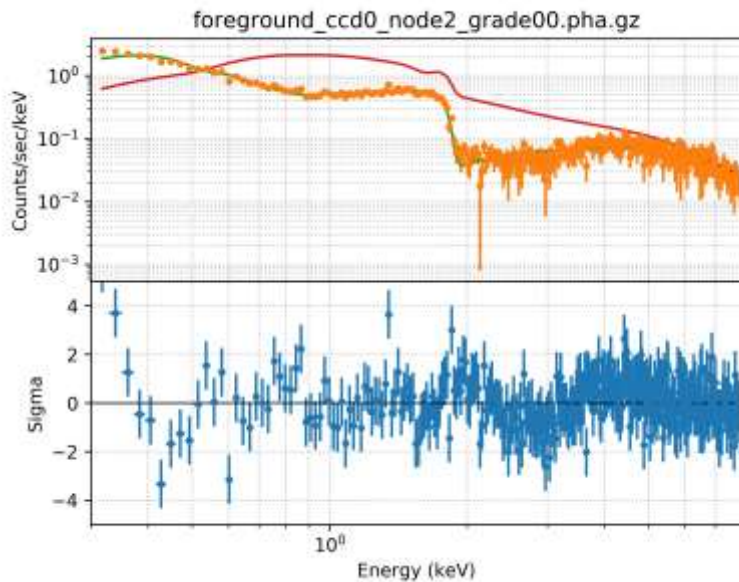


Crab cal ARF

The data from the Crab calibration were sufficient to fit an ARF. The data were fit to an absorbed power law representing the Crab Nebula with parameters taken from literature, and the ARF was modeled by an initial ARF generated by the XIS simulations and multiplied by two independent polynomials representing corrections to the ARF above and below the Silicon edge at 1.8 keV. The ARF fits were generally good with CCD 2 node 1 being a slight exception and the grade 2-5 fits being slightly worse than the grade 0. The ARFs were lower than expected at higher energies and unexpectedly high at low energy.



datasets = None

itermethodname = none

methodname = levmar

statname = chi2gehrels

succeeded = True

parnames = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4', 'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')

parvals = (496687.42732464004, -2029547.0472123194, 3290579.1068272754, -2633442.7507511117, 1039728.8507889463, -161714.06075949888, -4018.0898707543865, 2499.320083140159, -97.02538831811334)

statval = 346.611052272

istatval = 15799.4963228

dstatval = 15452.88527054775

numpoints = 324

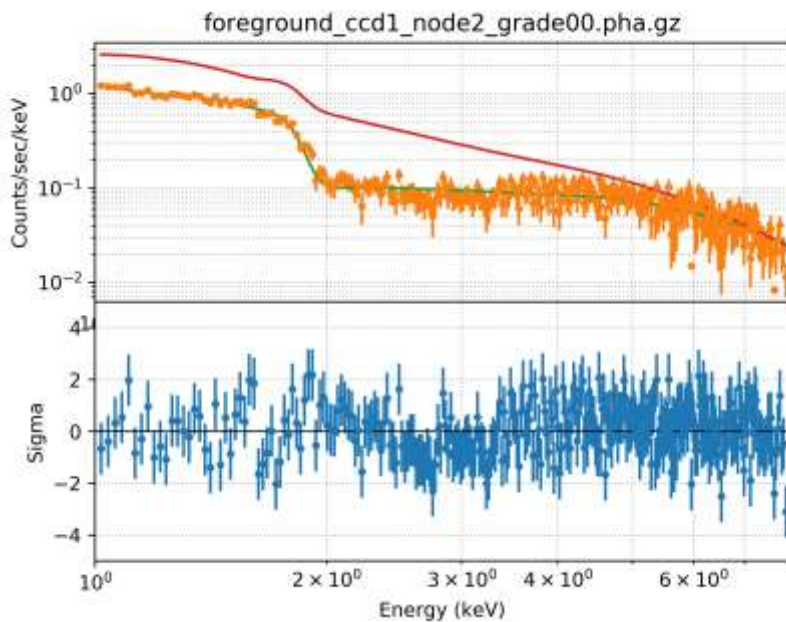
dof = 315

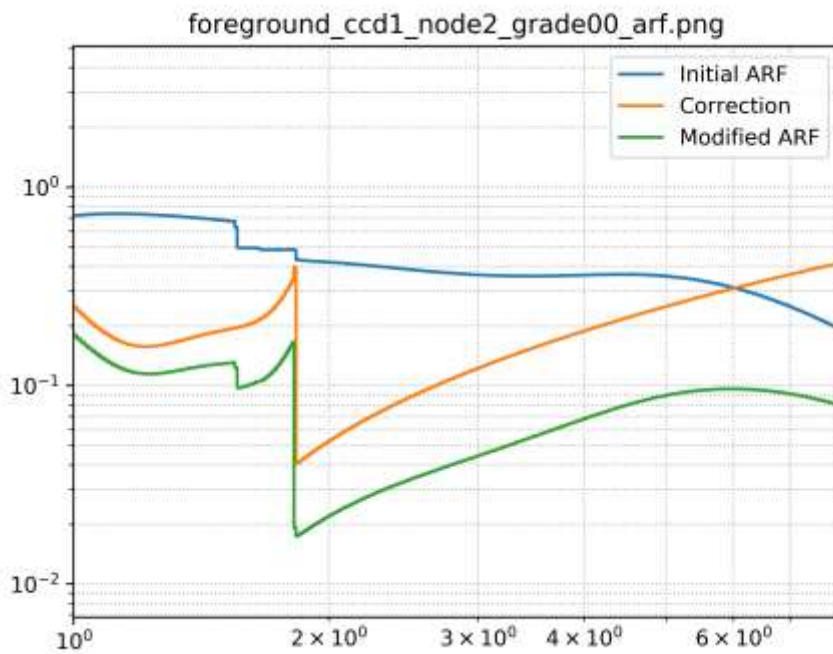
qval = 0.10639292354622347

rstat = 1.10035254689

message = successful termination

nfev = 170





datasets = None

itermethodname = none

methodname = levmar

statname = chi2gehrels

succeeded = True

parnames = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4', 'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')

parvals = (120997.46510525249, 5691.498162081756, -602071.4886993786, 838334.7453792591, -437344.99336173123, 80933.24828808525, -2525.471348606975, 2019.946199656397, -49.73668119105227)

statval = 288.859770142

istatval = 13113.0521916

dstatval = 12824.192421461581

numpoints = 299

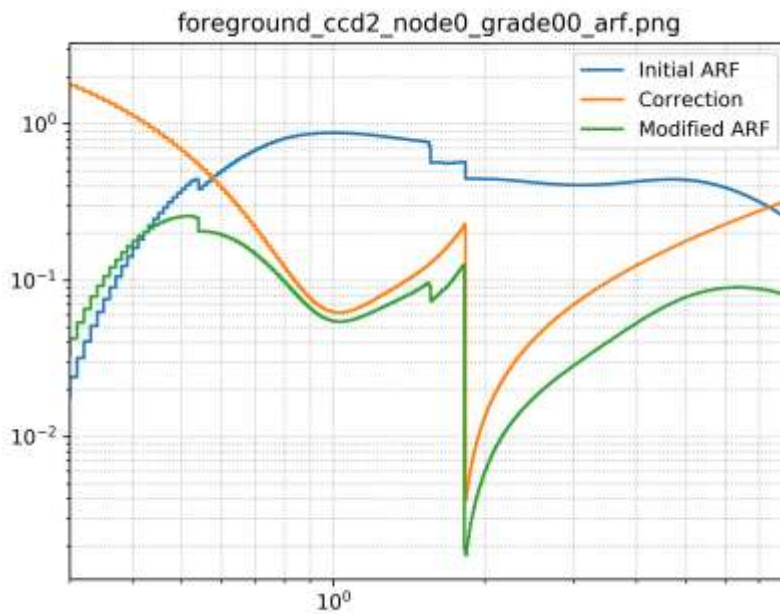
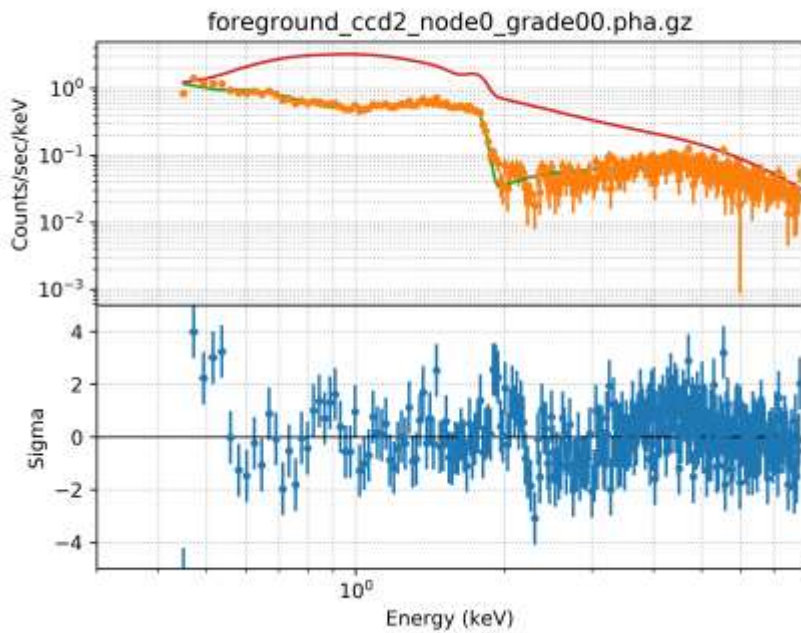
dof = 290

qval = 0.5078635128547097

rstat = 0.996068172904

message = successful termination

nfev = 160

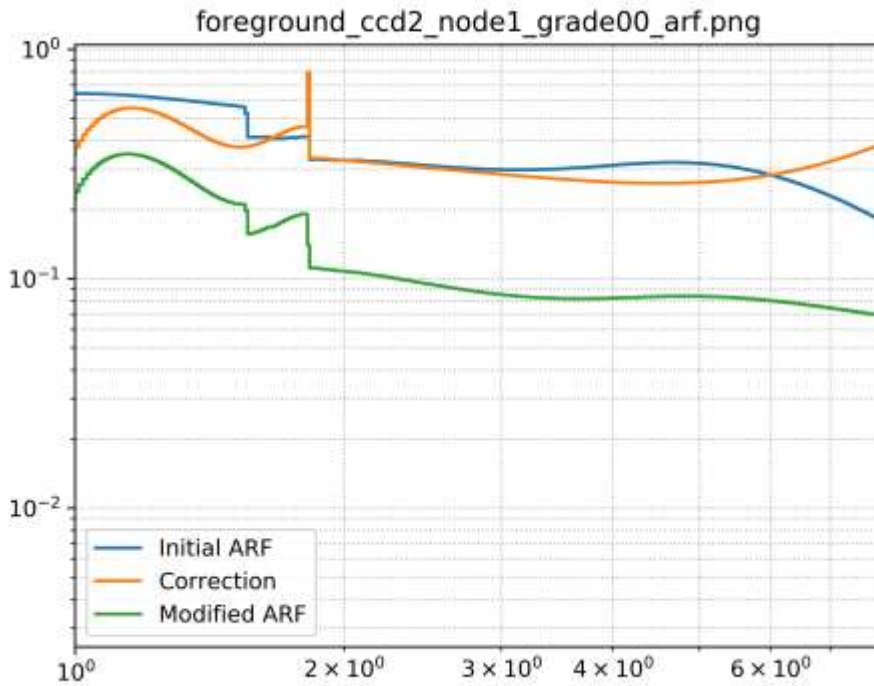
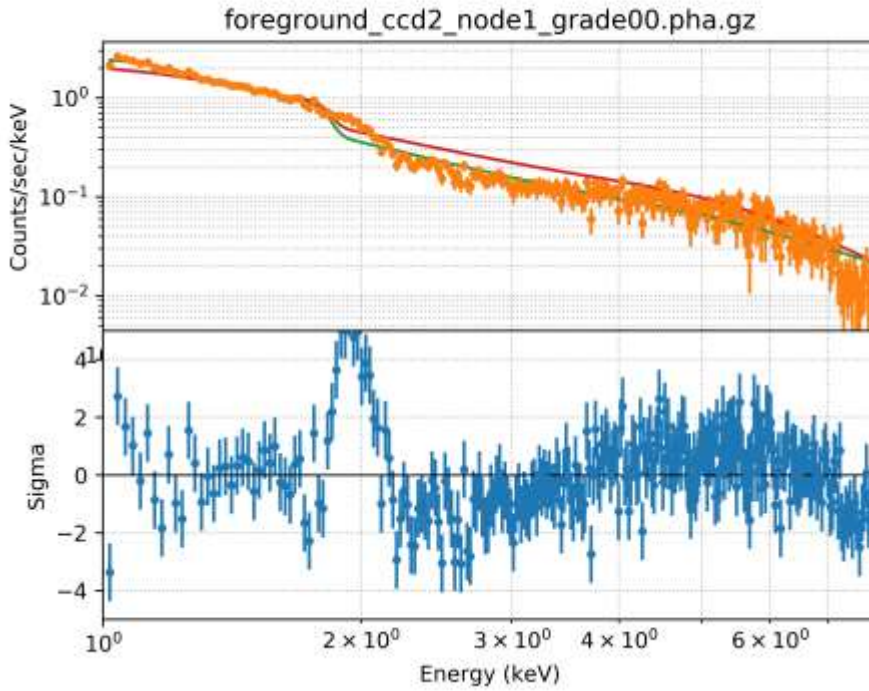


```

datasets      = None
itermethodname = none
methodname    = levmar
statname      = chi2gehrels
succeeded     = True
parnames      = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4',
'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')
parvals      = (143213.5748584361, -494966.0528249761, 677343.3665881995, -
454405.8228227126, 149380.07437778625, -19042.607251909823, -2549.865677976256,
1478.5046226101592, -22.382017309446503)
statval      = 366.66005602
istatval     = 13754.2282006
dstatval     = 13387.568144574136
numpoints    = 310
dof          = 301
qval        = 0.005706957550285232

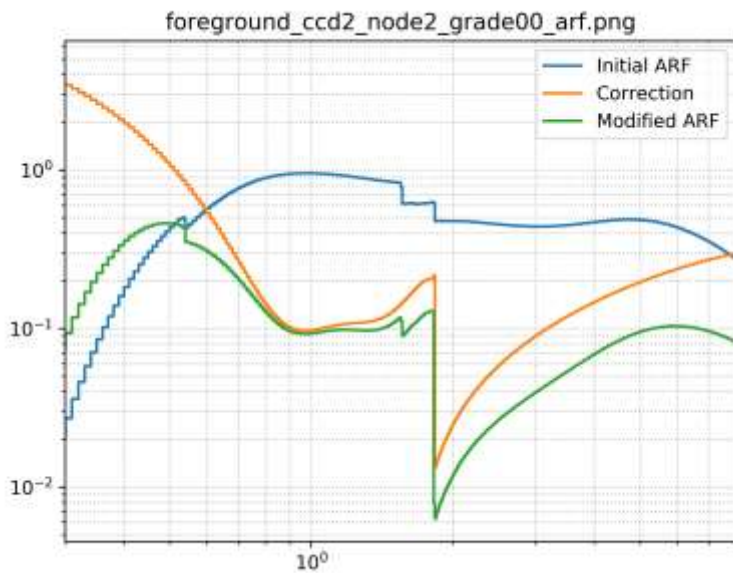
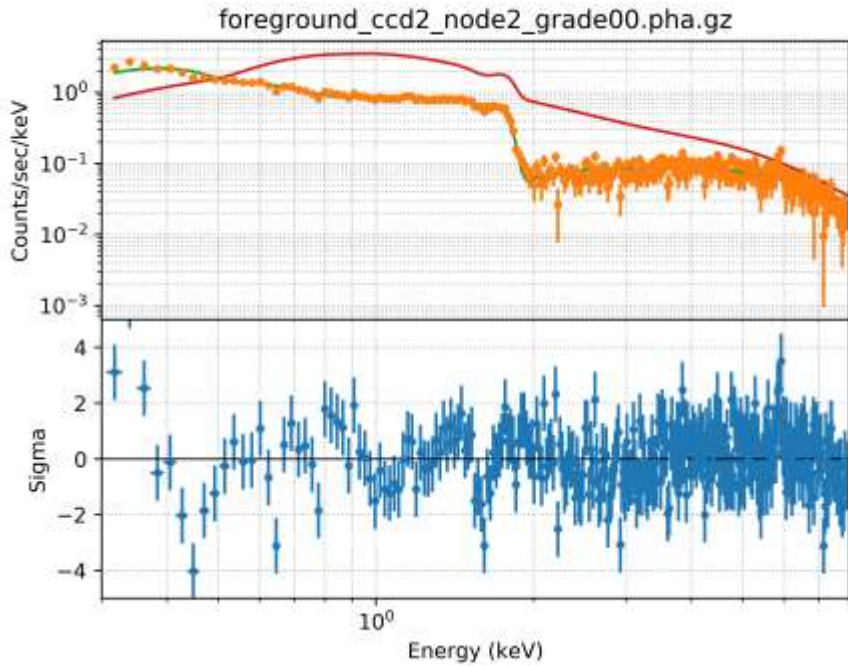
```

rstat = 1.218139721
message = successful termination
nfev = 150



datasets = None
itermethodname = none
methodname = levmar
statname = chi2gehrels
succeeded = True
parnames = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4',
'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')

parvals = (-1062337.442639018, 2816207.0288916533, -2555435.24120667, 826216.7010331982, 27816.220700539707, -43718.90767557113, 12073.110609240193, -2414.601248267855, 265.97530104036935)
statval = 580.06172355
istatval = 27044.9183745
dstatval = 26464.85665097785
numpoints = 287
dof = 278
qval = 1.9793394186174305e-23
rstat = 2.08655296241
message = successful termination
nfev = 170

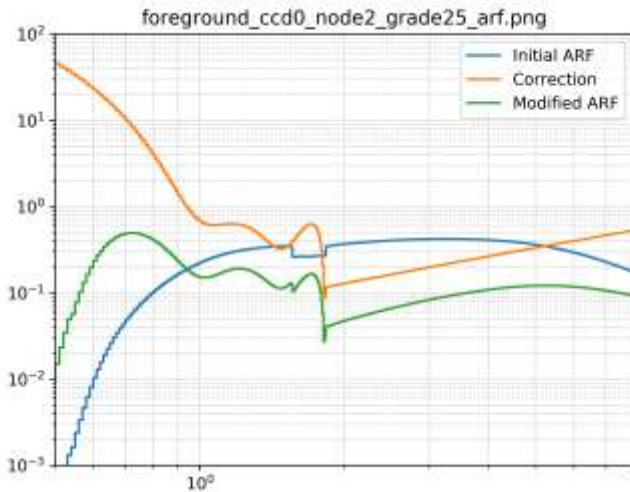
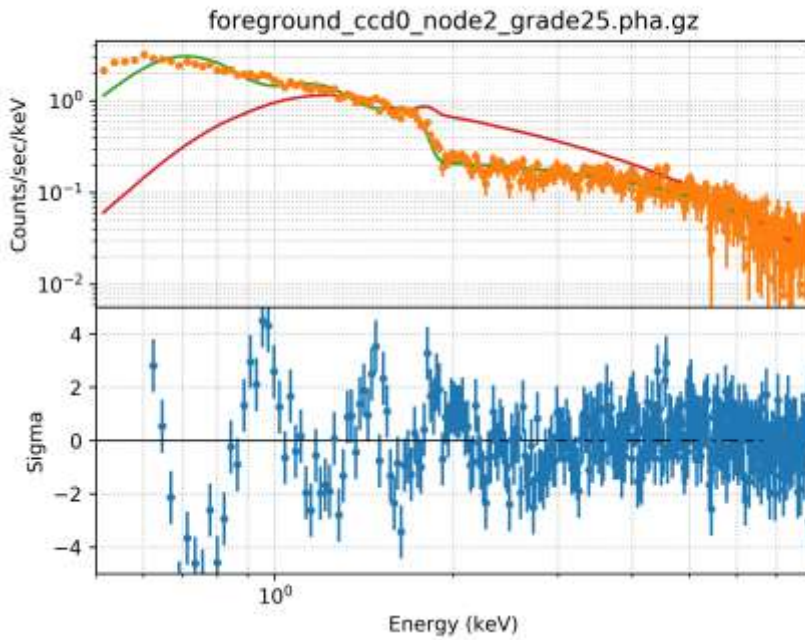


datasets = None
itermethodname = none

```

methodname      = levmar
statname        = chi2gehrels
succeeded       = True
parnames        = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4',
'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')
parvals         = (347297.325324894, -1380770.0085074161, 2180579.980725236, -
1697483.679962843, 650972.3094844427, -98216.83862168329, -3152.4596384557813,
2064.8152984337844, -95.25417670740201)
statval         = 415.947919588
istatval        = 21854.6957001
dstatval        = 21438.747780509915
numpoints       = 329
dof             = 320
qval            = 0.00023757669987422287
rstat           = 1.29983724871
message         = successful termination
nfev            = 170

```

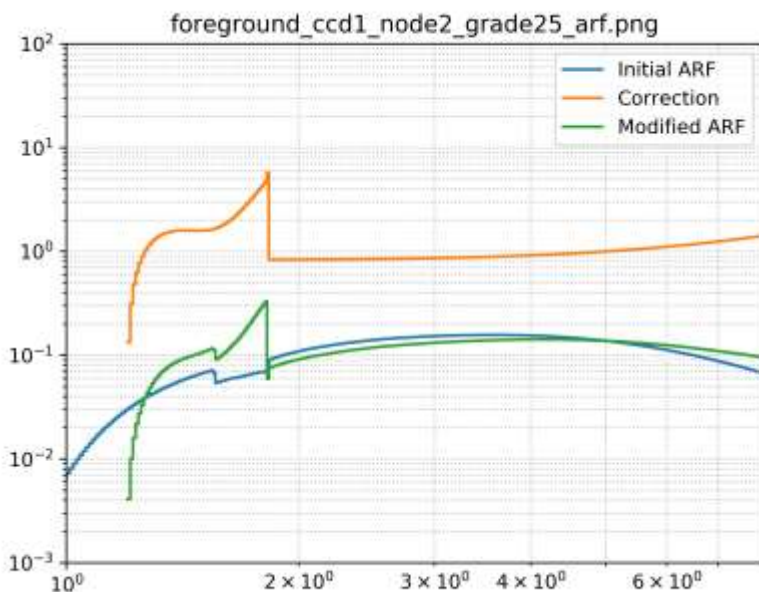
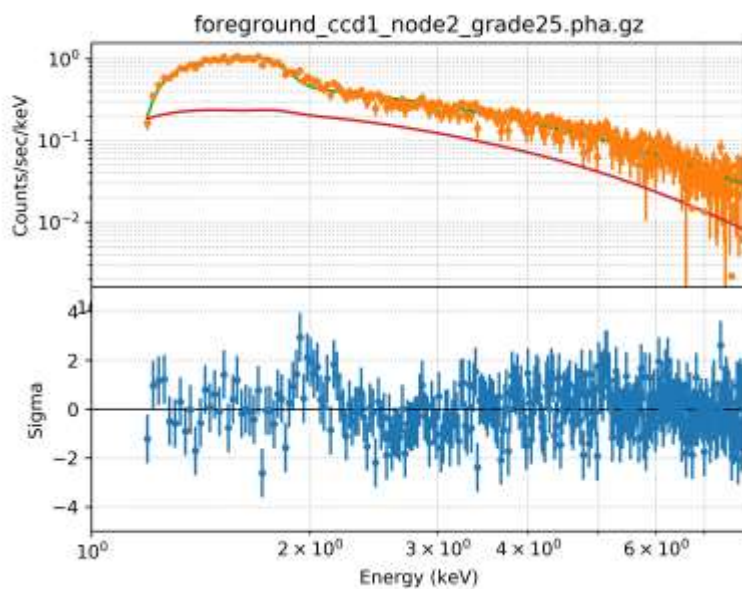


datasets = None

```

itermethodname = none
methodname     = levmar
statname       = chi2gehrels
succeeded      = True
parnames       = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4',
'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')
parvals        = (13073531.795345984, -50156481.58378112, 76265277.03658897, -
57353643.20373525, 21322073.179326817, -3134495.868938713, -311.8556398848897,
1654.2072951308514, -11.331901967904642)
statval        = 992.086822604
istatval       = 24994.8539949
dstatval       = 24002.767172312586
numpoints      = 339
dof            = 330
qval           = 1.964122290527857e-67
rstat          = 3.00632370486
message        = successful termination
nfev           = 220

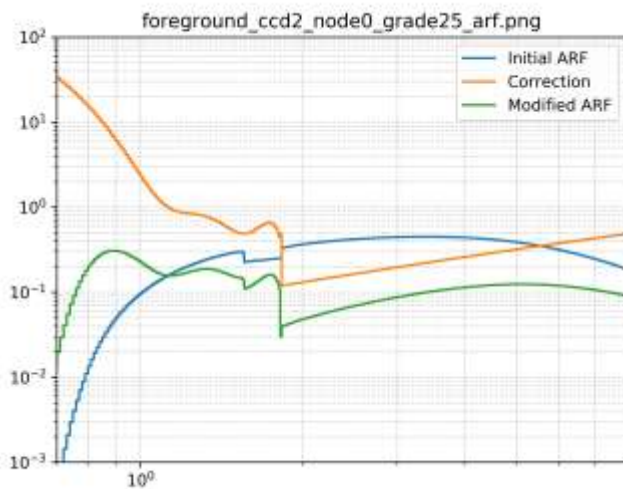
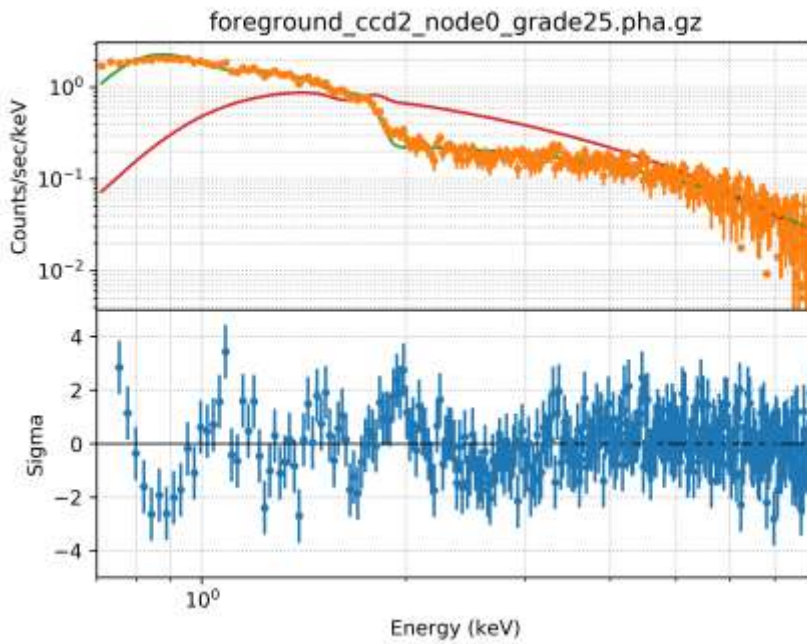
```




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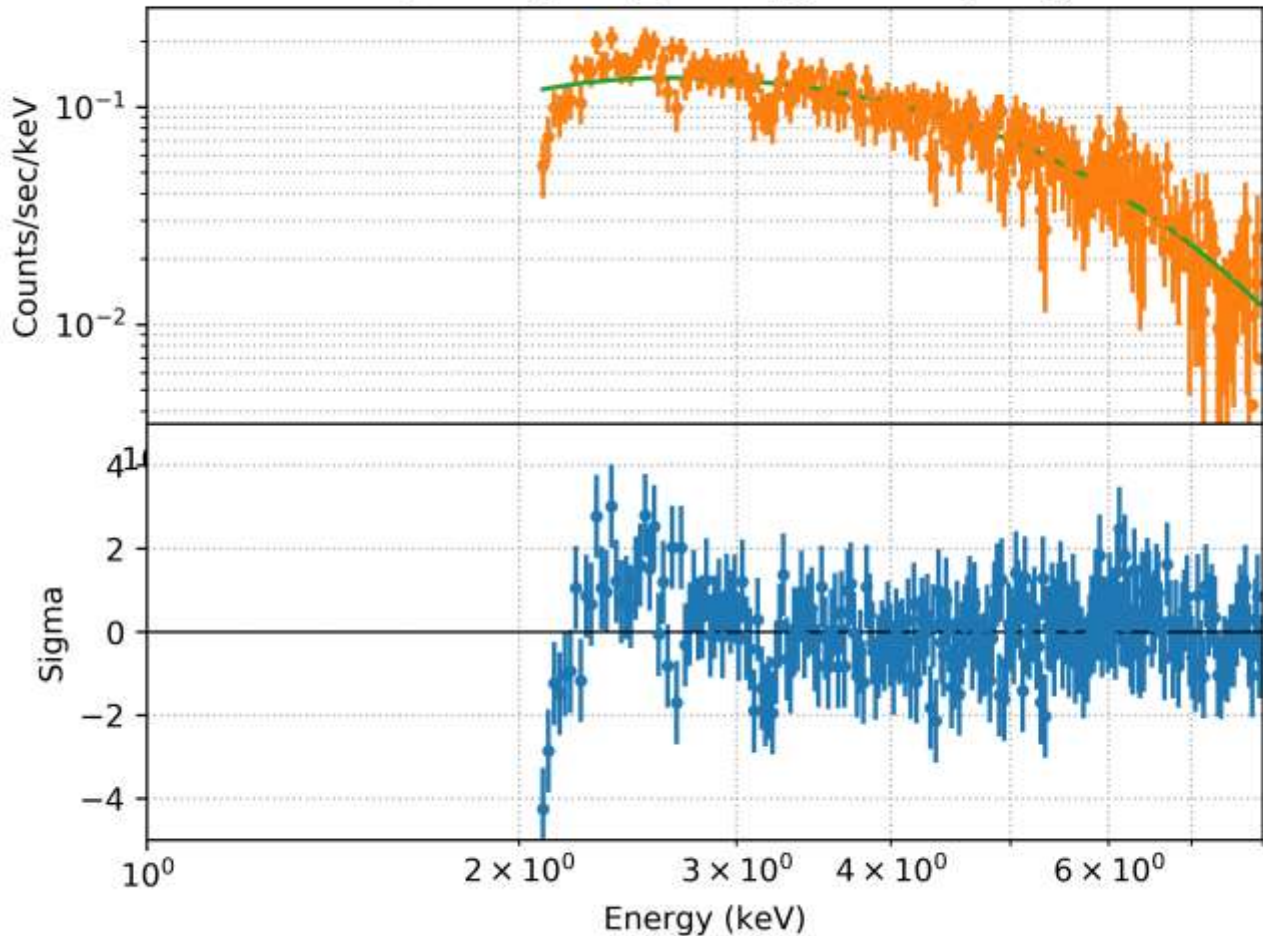
datasets      = None
itermethodname = none
methodname    = levmar
statname     = chi2gehrels
succeeded    = True
parnames     = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4',
'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')
parvals     = (-10681396.098752191, 23074068.60667797, -16074642.727673974,
2559474.810750877, 1260698.9606409282, -361113.3240605526, 21916.31295017799, -
1096.2840296727115, 353.3208600712736)
statval     = 288.452108134
istatval    = 13013.31269
dstatval    = 12724.860581911136
numpoints   = 311
dof         = 302
qval        = 0.7028061235786065
rstat       = 0.955139430908
message     = successful termination
nfev        = 190

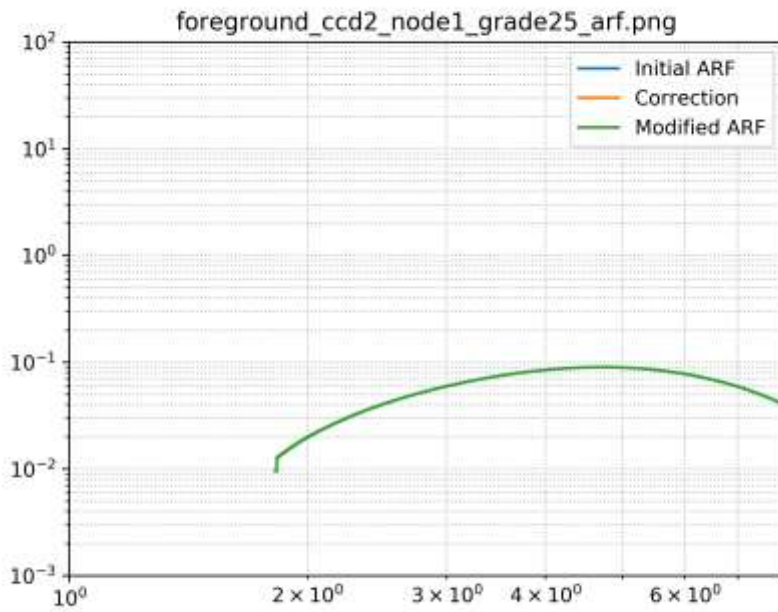
```



```
datasets      = None
itermethodname = none
methodname    = levmar
statname      = chi2gehrels
succeeded     = True
parnames     = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4',
'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')
parvals      = (27909597.81546155, -99253171.53147975, 140430290.20693165, -
98681935.13079229, 34424357.40651741, -4768009.602703365, -212.13251602505437,
1751.6327544333167, -32.508772998802435)
statval      = 449.11844249
istatval     = 22626.198781
dstatval     = 22177.08033854275
numpoints    = 332
dof          = 323
qval         = 4.13808066762867e-06
rstat        = 1.39045957427
message      = successful termination
nfev        = 220
```

foreground_ccd2_node1_grade25.pha.gz

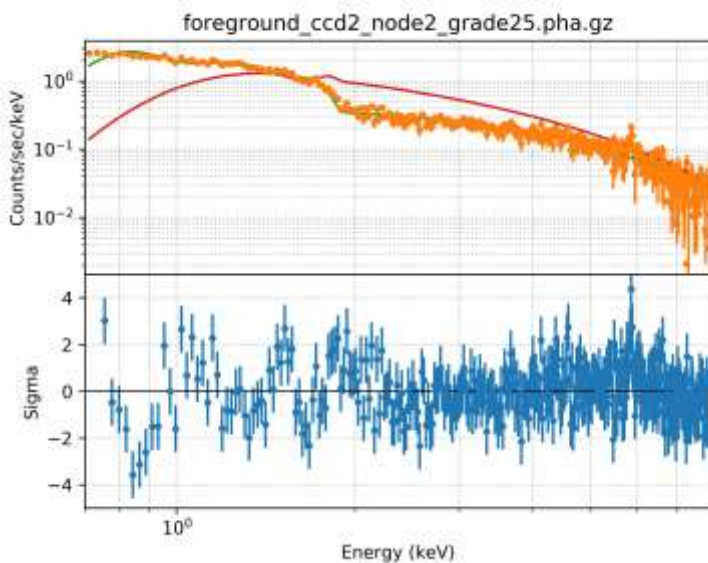


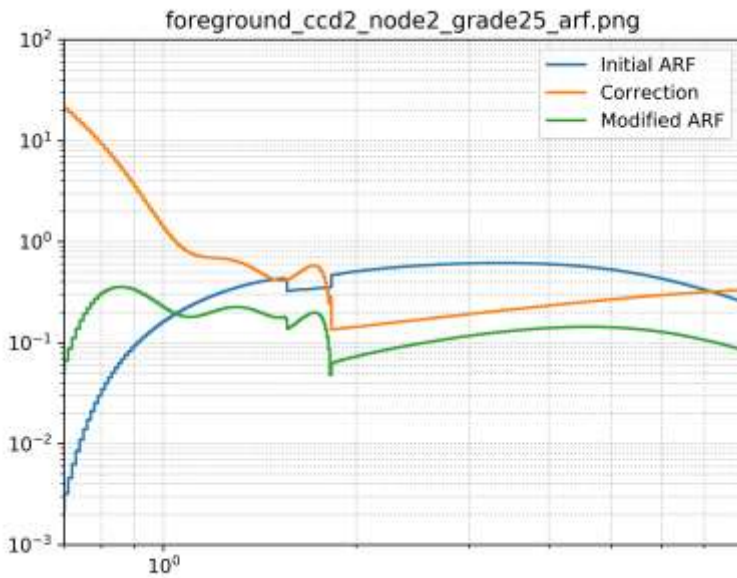


```

datasets      = None
itermethodname = none
methodname    = levmar
statname      = chi2gehrels
succeeded     = True
parnames     = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4',
'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')
parvals      = (1.0, 0.0, 0.0, 0.0, 0.0, 0.0, 78119.76179766748, -61486.53171462368,
4925.969630472755)
statval      = 233.786795729
istatval     = 4988.13219951
dstatval    = 4754.345403784512
numpoints    = 241
dof          = 232
qval         = 0.4547482183121019
rstat        = 1.00770170573
message      = successful termination
nfev         = 30

```





```

datasets          = None
itermethodname   = none
methodname       = levmar
statname         = chi2gehrels
succeeded        = True
parnames         = ('below0.c0', 'below0.c1', 'below0.c2', 'below0.c3', 'below0.c4',
'below0.c5', 'above0.c0', 'above0.c1', 'above0.c2')
parvals          = (20125903.45483166, -73288449.01711965, 106109702.05293907, -
76243201.04891686, 27174685.133692723, -3842744.683343242, 672.6264917141,
1575.0997843275482, -80.4835830529596)
statval          = 517.931834891
istatval         = 27008.1773654
dstatval        = 26490.245530503485
numpoints       = 333
dof              = 324
qval            = 3.9774107530657153e-11
rstat           = 1.59855504596
message         = successful termination
nfev            = 220

```