xi system fpi covariance

```
 Results for fitting in fpi units:
xi:xi_st:d_n2lo:l_lo:s_lo_fpi_discardcov-True

---
Extrapolation:
Particle: xi
mass: 1306.6(9.5) [PDG: 1315(20)]
---
Particle: xi_st
mass: 1510(15) [PDG: 1532(32)]
---

Error Budget:
xi
  stat    79.0%
  pp      20.9%
  chiral   6.1%
  disc     0.8%
xi_st
  stat    88.0%
  pp      11.9%
  disc     0.7%
  chiral   0.2%
Least Square Fit:
  chi2/dof [dof] = 0.79 [34]    Q = 0.81    logGBF = 93.271

Parameters:
       m_{xi,0}      1.130 (11)      [     1.0 (1.0) ]
         s_{xi}       0.01 (31)      [     0.0 (2.0) ]
         S_{xi}      3e-16 +- 2      [     0.0 (2.0) ]
       b_{xi,4}      -2.1 (1.2)      [     0.0 (2.0) ]  *
       B_{xi,4}      4e-16 +- 2      [     0.0 (2.0) ]
       d_{xi,a}      -0.36 (12)      [    -2.0 (2.0) ]
      d_{xi,aa}      -0.05 (43)      [     2.0 (4.0) ]
```

```
    d_{xi,al}       2.61 (57)      [     0.0 (5.0) ]
     d_{xi,s}       0.89 (19)      [     0.0 (5.0) ]
  m_{xi_st,0}      1.306 (12)      [     1.2 (1.0) ]
   s_{xi,bar}     -3e-16 +- 2      [     0.0 (2.0) ]
   S_{xi,bar}     -1e-15 +- 2      [     0.0 (2.0) ]
  b_{xi_st,4}      -3.9 (1.4)      [     0.0 (5.0) ]
  B_{xi_st,4}      1e-15 +- 2      [     0.0 (2.0) ]
  d_{xi_st,a}       0.29 (16)      [     0.0 (2.0) ]
 d_{xi_st,aa}      -1.96 (59)      [     0.0 (5.0) ]
 d_{xi_st,al}       2.36 (98)      [     0.0 (5.0) ]
  d_{xi_st,s}       1.02 (17)      [     0.0 (5.0) ]
       m_k 0   0.162019 (72)      [ 0.162025 (73) ]
           2   0.228705 (90)      [ 0.228713 (91) ]
           3    0.24108 (14)      [  0.24107 (14) ]
           4    0.24700 (12)      [  0.24699 (12) ]
           5    0.25524 (12)      [  0.25523 (13) ]
           6    0.30201 (11)      [  0.30199 (11) ]
           7    0.31025 (19)      [  0.31026 (19) ]
           8    0.32404 (20)      [  0.32404 (21) ]
           9    0.33330 (16)      [  0.33332 (16) ]
          10    0.34321 (14)      [  0.34322 (14) ]
          11    0.38746 (14)      [  0.38748 (14) ]
          12    0.38689 (21)      [  0.38691 (21) ]
          13    0.40487 (25)      [  0.40471 (25) ]
          14    0.40380 (22)      [  0.40382 (22) ]
          15    0.41419 (27)      [  0.41423 (28) ]
          16    0.42747 (27)      [  0.42749 (27) ]
    eps2_a 6   0.123784 (95)      [ 0.123786 (95) ]
          11    0.19515 (12)      [  0.19514 (12) ]
          12    0.19738 (28)      [  0.19737 (28) ]
          13    0.20362 (32)      [  0.20368 (32) ]
          14    0.20417 (25)      [  0.20416 (25) ]
          15    0.20708 (48)      [  0.20706 (48) ]
          16    0.21169 (56)      [  0.21168 (56) ]
      m_pi 0   0.094485 (58)      [ 0.094488 (58) ]
           2   0.097949 (63)      [ 0.097953 (63) ]
           3    0.14087 (12)      [  0.14086 (12) ]
           4    0.15797 (20)      [  0.15798 (20) ]
```

```
           6    0.08089 (16)      [  0.08088 (16) ]
          10    0.24332 (16)      [  0.24331 (16) ]
          11   0.102705 (69)      [ 0.102710 (69) ]
          13    0.23629 (29)      [  0.23634 (29) ]
          15    0.26521 (30)      [  0.26524 (30) ]
 lam_chi  0     0.3810 (10)       [   0.3807 (10) ]
           1     0.5127 (12)      [   0.5126 (13) ]
           2    0.53706 (97)      [  0.53679 (99) ]
           3    0.57254 (82)      [  0.57265 (85) ]
           4     0.5851 (10)      [   0.5854 (11) ]
           5    0.60762 (93)      [  0.60777 (95) ]
           6     0.7142 (13)      [   0.7152 (14) ]
           7     0.7402 (15)      [   0.7400 (16) ]
           8     0.7730 (13)      [   0.7729 (14) ]
           9     0.7920 (17)      [   0.7914 (18) ]
          10     0.8156 (13)      [   0.8152 (14) ]
          11     0.8970 (13)      [   0.8963 (14) ]
          12     0.9151 (10)      [   0.9149 (11) ]
          13     0.9472 (10)      [   0.9487 (11) ]  *
          14     0.9553 (16)      [   0.9545 (17) ]
          15     0.9660 (14)      [   0.9656 (14) ]
          16     0.9963 (15)      [   0.9960 (16) ]
  eps_pi  0    0.24796 (69)      [  0.24820 (71) ]
           1    0.11604 (32)      [  0.11604 (33) ]
           2    0.18238 (36)      [  0.18248 (37) ]
           3    0.24604 (43)      [  0.24598 (44) ]
           4    0.26996 (56)      [  0.26984 (58) ]
           5    0.29805 (53)      [  0.29798 (54) ]
           6    0.11324 (32)      [  0.11306 (33) ]
           7    0.18120 (39)      [  0.18125 (42) ]
           8    0.24375 (49)      [  0.24380 (51) ]
           9    0.26979 (66)      [  0.27002 (69) ]
          10    0.29833 (50)      [  0.29845 (52) ]
          11    0.11450 (19)      [  0.11459 (20) ]
          12    0.18058 (30)      [  0.18062 (31) ]
          13    0.24952 (35)      [  0.24916 (36) ]  *
          14    0.24490 (44)      [  0.24511 (47) ]
          15    0.27453 (51)      [  0.27469 (52) ]
```

```
            16    0.30418 (53)      [  0.30429 (54) ]

Settings:
  svdcut/n = 1e-12/0    tol = (1e-08*,1e-10,1e-10)    (itns/time =
21/0.1)

Results for fitting in fpi units:
xi:xi_st:d_n2lo:l_lo:s_lo_fpi_discardcov-False

---
Extrapolation:
Particle: xi
mass: 1305.4(9.2) [PDG: 1315(20)]
---
Particle: xi_st
mass: 1508(15) [PDG: 1532(32)]
---

Error Budget:
xi
  stat    77.4%
  pp      22.3%
  chiral   4.5%
  disc     0.7%
xi_st
  stat    88.7%
  pp      11.2%
  disc     0.7%
  chiral   0.2%
Least Square Fit:
  chi2/dof [dof] = 0.69 [34]    Q = 0.91    logGBF = 95.983

Parameters:
       m_{xi,0}      1.128 (10)      [     1.0 (1.0) ]
         s_{xi}       0.04 (29)      [     0.0 (2.0) ]
         S_{xi}     -6e-16 +- 2      [     0.0 (2.0) ]
       b_{xi,4}      -2.2 (1.1)      [     0.0 (2.0) ]  *
       B_{xi,4}     -2e-18 +- 2      [     0.0 (2.0) ]
```

```
     d_{xi,a}      -0.34 (11)      [    -2.0 (2.0) ]
    d_{xi,aa}      -0.11 (41)      [     2.0 (4.0) ]
    d_{xi,al}       2.57 (56)      [     0.0 (5.0) ]
     d_{xi,s}       0.90 (18)      [     0.0 (5.0) ]
  m_{xi_st,0}      1.304 (12)      [     1.2 (1.0) ]
   s_{xi,bar}     -2e-16 +- 2      [     0.0 (2.0) ]
   S_{xi,bar}      1e-15 +- 2      [     0.0 (2.0) ]
  b_{xi_st,4}      -4.0 (1.4)      [     0.0 (5.0) ]
  B_{xi_st,4}      1e-16 +- 2      [     0.0 (2.0) ]
  d_{xi_st,a}       0.32 (16)      [     0.0 (2.0) ]
 d_{xi_st,aa}      -2.01 (58)      [     0.0 (5.0) ]
 d_{xi_st,al}       1.99 (96)      [     0.0 (5.0) ]
  d_{xi_st,s}       0.97 (16)      [     0.0 (5.0) ]
        m_k 0   0.162021 (72)      [ 0.162025 (73) ]
            2   0.228706 (90)      [ 0.228713 (91) ]
            3    0.24108 (14)      [  0.24107 (14) ]
            4    0.24700 (12)      [  0.24699 (12) ]
            5    0.25523 (12)      [  0.25523 (13) ]
            6    0.30201 (11)      [  0.30199 (11) ]
            7    0.31025 (19)      [  0.31026 (19) ]
            8    0.32404 (20)      [  0.32404 (21) ]
            9    0.33331 (16)      [  0.33332 (16) ]
           10    0.34321 (14)      [  0.34322 (14) ]
           11    0.38747 (14)      [  0.38748 (14) ]
           12    0.38690 (21)      [  0.38691 (21) ]
           13    0.40482 (25)      [  0.40471 (25) ]
           14    0.40380 (22)      [  0.40382 (22) ]
           15    0.41420 (27)      [  0.41423 (28) ]
           16    0.42748 (27)      [  0.42749 (27) ]
    eps2_a 6   0.123784 (95)      [ 0.123786 (95) ]
           11    0.19515 (12)      [  0.19514 (12) ]
           12    0.19738 (28)      [  0.19737 (28) ]
           13    0.20364 (32)      [  0.20368 (32) ]
           14    0.20417 (25)      [  0.20416 (25) ]
           15    0.20708 (48)      [  0.20706 (48) ]
           16    0.21169 (56)      [  0.21168 (56) ]
      m_pi 0   0.094486 (58)      [ 0.094488 (58) ]
            2   0.097949 (63)      [ 0.097953 (63) ]
```

```
             3    0.14087 (12)      [  0.14086 (12) ]
             4    0.15797 (20)      [  0.15798 (20) ]
             6    0.08089 (16)      [  0.08088 (16) ]
             8    0.18843 (17)      [  0.18842 (17) ]
            11   0.102706 (69)      [ 0.102710 (69) ]
            13    0.23631 (29)      [  0.23634 (29) ]
            15    0.26521 (30)      [  0.26524 (30) ]
    lam_chi 0     0.3809 (10)       [   0.3807 (10) ]
            1     0.5126 (12)       [   0.5126 (13) ]
            2    0.53703 (97)       [  0.53679 (99) ]
            3    0.57254 (82)       [  0.57265 (85) ]
            4     0.5851 (10)       [   0.5854 (11) ]
            5    0.60775 (93)       [  0.60777 (95) ]
            6     0.7145 (13)       [   0.7152 (14) ]
            7     0.7402 (15)       [   0.7400 (16) ]
            8     0.7729 (13)       [   0.7729 (14) ]
            9     0.7919 (17)       [   0.7914 (18) ]
           10     0.8155 (14)       [   0.8152 (14) ]
           11     0.8968 (14)       [   0.8963 (14) ]
           12     0.9151 (10)       [   0.9149 (11) ]
           13     0.9476 (11)       [   0.9487 (11) ]
           14     0.9551 (17)       [   0.9545 (17) ]
           15     0.9659 (14)       [   0.9656 (14) ]
           16     0.9962 (15)       [   0.9960 (16) ]
     eps_pi 0    0.24803 (69)      [  0.24820 (71) ]
            1    0.11604 (32)      [  0.11604 (33) ]
            2    0.18239 (36)      [  0.18248 (37) ]
            3    0.24604 (43)      [  0.24598 (44) ]
            4    0.26997 (56)      [  0.26984 (58) ]
            5    0.29799 (53)      [  0.29798 (54) ]
            6    0.11321 (32)      [  0.11306 (33) ]
            7    0.18120 (40)      [  0.18125 (42) ]
            8    0.24380 (49)      [  0.24380 (51) ]
            9    0.26985 (67)      [  0.27002 (69) ]
           10    0.29836 (51)      [  0.29845 (52) ]
           11    0.11452 (19)      [  0.11459 (20) ]
           12    0.18059 (30)      [  0.18062 (31) ]
           13    0.24941 (35)      [  0.24916 (36) ]
```

```
            14    0.24497 (45)      [  0.24511 (47) ]
            15    0.27458 (51)      [  0.27469 (52) ]
            16    0.30422 (53)      [  0.30429 (54) ]

Settings:
  svdcut/n = 1e-12/0    tol = (1e-08*,1e-10,1e-10)    (itns/time =
22/0.1)
```