```
< Calculation of the overlap vector >

* 0 <oovv/oovv>
(    1.00000000) T2(o1,o2,a,c) E2(i,k,o1,o2)
(    1.00000000) T2(o1,o2,c,a) E2(i,k,o2,o1)

Decompose RDMs .....

< RESULT2 >
    0 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,c)
    1 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,c,a)
Setting up parameters as default ....

     _/_/_/_/                                  _/
    _/        _/_/    _/_/_/  _/_/    _/_/_/_/    _/_/
   _/_/_/  _/_/_/_/  _/    _/    _/  _/        _/    _/
  _/      _/        _/    _/    _/  _/        _/    _/
 _/        _/_/_/  _/    _/    _/     _/_/    _/_/


! * 0 terms are replaced in the linking process ....

! No.0
! O2(i,k,a,c)  <--
! (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,c)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... O2(i,k,a,c)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: O2(i,k,a,c)  <--  (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,c)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read T2 from GA for c
  Read O2 from GA for c
  Declare O2 as a o^2v^1 tensor
  O2_(c)(i, k, a) +=  sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,a,)
  Accumulate O2_(c)(i,k,a) for c

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.1
! O2(i,k,a,c)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,c,a)
Case 0 ..... O2(i,k,c,a)  <----- (    1.00000000)  D2(i,o1,k,o2) T2(o2,o1,c,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)

! The optimal choice is .....
1: O2(i,k,c,a)  <--  (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,c,a)

! Scaling       : O(o^4v^2)
! Max size of X : o^2

! * Begin scaling analysis .... *

for c in {vir}:
  Read O2 from GA for c
  for a in {vir}:
    Read T2 from GA for a
    Declare O2 as a o^2 tensor
    O2_(c)(i, k, a) +=  sum(o1,o2) D2(i,o1,k,o2) * T2(o2,o1,c,)
```



```
  Accumulate O2_(c)(i,k,a) for c

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

* 1 <ooov/ooov>
(    1.00000000) T2(o1,o2,o3,a) E3(i,k,o3,m,o2,o1)
(    1.00000000) T2(o1,o2,m,a) E2(i,k,o1,o2)

Decompose RDMs .....

< RESULT2 >
    0 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,a)
    1 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,m,a)
Setting up parameters as default ....

     _/_/_/_/                                  _/
    _/        _/_/    _/_/_/  _/_/    _/_/_/_/    _/_/
   _/_/_/  _/_/_/_/  _/    _/    _/  _/        _/    _/
  _/      _/        _/    _/    _/  _/        _/    _/
 _/        _/_/_/  _/    _/    _/     _/_/    _/_/


! * 0 terms are replaced in the linking process ....

! No.0
! O2(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... O2(i,m,k,a)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3) T2(o3,o2,o
1,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: O2(i,m,k,a)  <--  (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read O2 from GA for a
  Declare O2 as a o^3 tensor
  O2_(a)(i, k, m) +=  sum(o2,o1,o3) D3(i,m,k,o2,o1,o3) * T2(o3,o2,o1,)
  Accumulate O2_(a)(i,k,m) for a

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.1
! O2(i,k,m,a)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,m,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... O2(i,k,m,a)  <----- (    1.00000000)  D2(i,o1,k,o2) T2(o1,o2,m,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: O2(i,k,m,a)  <--  (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,m,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
```

```
  Read T2 from GA for a
  Read O2 from GA for a
  Declare O2 as a o^3 tensor
  O2_(a)(i, k, m) +=  sum(o1,o2) D2(i,o1,k,o2) * T2(o1,o2,m,)
  Accumulate O2_(a)(i,k,m) for a

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

< Calculation of the diagonal elements starts >

* 1 L:oovv/R:oovv

(    0.50000000) V2(c1,c2,c3,c4) E4(c1,c2,i,k,c3,c4,i,k)
(    0.50000000) V2(c1,c2,c3,c4) kDelta(a,c) kDelta(a,c) E4(c1,c2,i,k,c3,c4,k,i)

(    0.50000000) V2(c1,o1,c2,o2) E4(c1,i,k,o1,c2,i,k,o2)
(    0.50000000) V2(c1,o1,c2,o2) kDelta(a,c) kDelta(a,c) E4(c1,i,k,o1,c2,k,i,o2)

(    0.50000000) V2(c1,c2,o2,o1) E4(c1,i,k,o1,o2,i,k,c2)
(    0.50000000) V2(c1,c2,o2,o1) kDelta(a,c) kDelta(a,c) E4(c1,i,k,o1,o2,k,i,c2)

(    0.50000000) V2(c1,a,c2,c) kDelta(a,c) E3(c1,i,k,c2,k,i)
(    0.50000000) V2(c1,a,c2,a) E3(c1,i,k,c2,i,k)
(    0.50000000) V2(c1,c,c2,c) E3(c1,i,k,c2,i,k)
(    0.50000000) V2(c1,a,c2,c) kDelta(a,c) E3(c1,i,k,c2,k,i)
(    0.50000000) V2(c1,c2,a,c) kDelta(a,c) E3(c1,i,k,i,k,c2)
(    0.50000000) V2(c1,c2,a,a) E3(c1,i,k,i,c2,k)
(    0.50000000) V2(c1,c2,c,c) E3(c1,i,k,k,i,c2)
(    0.50000000) V2(c1,c2,c,a) kDelta(a,c) E3(c1,i,k,k,c2,i)
(    0.50000000) V2(c1,c2,o2,o1) E4(c1,i,k,o1,o2,i,k,c2)
(    0.50000000) V2(c1,c2,o2,o1) kDelta(a,c) kDelta(a,c) E4(c1,i,k,o1,o2,k,i,c2)

(    0.50000000) V2(c1,o1,c2,o2) E4(c1,i,k,o1,c2,i,k,o2)
(    0.50000000) V2(c1,o1,c2,o2) kDelta(a,c) kDelta(a,c) E4(c1,i,k,o1,c2,k,i,o2)

(    0.50000000) V2(o1,o2,o3,o4) E4(i,k,o1,o2,i,k,o3,o4)
(    0.50000000) V2(o1,o2,o3,o4) kDelta(a,c) kDelta(a,c) E4(i,k,o1,o2,k,i,o3,o4)

(    0.50000000) V2(o1,a,o2,c) kDelta(a,c) E3(i,k,o1,k,i,o2)
(    0.50000000) V2(o1,a,o2,a) E3(i,k,o1,i,k,o2)
(    0.50000000) V2(o1,c,o2,c) E3(i,k,o1,i,k,o2)
(    0.50000000) V2(o1,a,o2,c) kDelta(a,c) E3(i,k,o1,k,i,o2)
(    0.50000000) V2(o1,o2,a,c) kDelta(a,c) E3(i,k,o1,k,o2,i)
(    0.50000000) V2(o1,o2,a,a) E3(i,k,o1,o2,k,i)
(    0.50000000) V2(o1,o2,c,c) E3(i,k,o1,i,o2,k)
(    0.50000000) V2(o1,o2,c,a) kDelta(a,c) E3(i,k,o1,o2,i,k)
(    0.50000000) V2(c1,c2,a,c) kDelta(a,c) E3(c1,i,k,i,k,c2)
(    0.50000000) V2(c1,c2,a,a) E3(c1,i,k,i,c2,k)
(    0.50000000) V2(c1,c2,c,c) E3(c1,i,k,k,i,c2)
(    0.50000000) V2(c1,c2,c,a) kDelta(a,c) E3(c1,i,k,k,c2,i)
(    0.50000000) V2(c1,a,c2,c) kDelta(a,c) E3(c1,i,k,c2,k,i)
(    0.50000000) V2(c1,a,c2,a) E3(c1,i,k,c2,i,k)
(    0.50000000) V2(c1,c,c2,c) E3(c1,i,k,c2,i,k)
(    0.50000000) V2(c1,a,c2,c) kDelta(a,c) E3(c1,i,k,c2,k,i)
(    0.50000000) V2(o1,o2,a,c) kDelta(a,c) E3(i,k,o1,k,o2,i)
(    0.50000000) V2(o1,o2,a,a) E3(i,k,o1,o2,k,i)
(    0.50000000) V2(o1,o2,c,c) E3(i,k,o1,i,o2,k)
(    0.50000000) V2(o1,o2,c,a) kDelta(a,c) E3(i,k,o1,o2,i,k)
(    0.50000000) V2(o1,a,o2,c) kDelta(a,c) E3(i,k,o1,k,i,o2)
(    0.50000000) V2(o1,a,o2,a) E3(i,k,o1,i,k,o2)
(    0.50000000) V2(o1,c,o2,c) E3(i,k,o1,i,k,o2)
(    0.50000000) V2(o1,a,o2,c) kDelta(a,c) E3(i,k,o1,k,i,o2)
(    0.50000000) V2(a,c,a,c) E2(i,k,i,k)
(    0.50000000) V2(a,a,c,c) E2(i,k,k,i)
(    0.50000000) V2(a,a,c,c) E2(i,k,k,i)
(    0.50000000) V2(a,c,a,c) E2(i,k,i,k)

Decompose RDMs .....
```



```
< RESULT >
    0 : (    2.00000000) D2(i,k,i,k) h(c1,c1)
    1 : (    2.00000000) D2(i,k,k,i) h(c1,c1) kDelta(a,c) kDelta(a,c)
    2 : (    1.00000000) D3(i,k,o1,i,k,o2) h(o1,o2)
    3 : (    1.00000000) D3(i,k,o1,k,i,o2) h(o1,o2) kDelta(a,c) kDelta(a,c)
    4 : (    2.00000000) D2(i,k,k,i) h(a,c) kDelta(a,c)
    5 : (    1.00000000) D2(i,k,i,k) h(a,a)
    6 : (    1.00000000) D2(i,k,i,k) h(c,c)
    7 : (    2.00000000) D2(i,k,i,k) V2(c2,c1,c2,c1)
    8 : (   -1.00000000) D2(i,k,i,k) V2(c2,c2,c1,c1)
    9 : (    2.00000000) D2(i,k,k,i) V2(c2,c1,c2,c1) kDelta(a,c) kDelta(a,c)
   10 : (   -1.00000000) D2(i,k,k,i) V2(c1,c1,c2,c2) kDelta(a,c) kDelta(a,c)
   11 : (    2.00000000) D3(i,k,o2,i,k,o1) V2(c1,o2,c1,o1)
   12 : (    2.00000000) D3(i,k,o1,k,i,o2) V2(c1,o1,c1,o2) kDelta(a,c) kDelta(a,
c)
   13 : (   -1.00000000) D3(i,k,o2,i,k,o1) V2(c1,c1,o2,o1)
   14 : (   -1.00000000) D3(i,k,o1,k,i,o2) V2(c1,c1,o1,o2) kDelta(a,c) kDelta(a,
c)
   15 : (    4.00000000) D2(i,k,k,i) V2(c1,a,c1,c) kDelta(a,c)
   16 : (    2.00000000) D2(i,k,i,k) V2(c1,a,c1,a)
   17 : (    2.00000000) D2(i,k,i,k) V2(c1,c,c1,c)
   18 : (   -2.00000000) D2(i,k,k,i) V2(c1,c1,a,c) kDelta(a,c)
   19 : (   -1.00000000) D2(i,k,i,k) V2(c1,c1,a,a)
   20 : (   -1.00000000) D2(i,k,i,k) V2(c1,c1,c,c)
   21 : (    0.50000000) D4(i,k,o1,o2,i,k,o3,o4) V2(o1,o2,o3,o4)
   22 : (    0.50000000) D4(i,k,o1,o2,k,i,o3,o4) V2(o1,o2,o3,o4) kDelta(a,c) kDe
lta(a,c)
   23 : (    2.00000000) D3(i,k,o1,k,i,o2) V2(o1,a,o2,c) kDelta(a,c)
   24 : (    1.00000000) D3(i,k,o2,i,k,o1) V2(o2,a,o1,a)
   25 : (    1.00000000) D3(i,k,o1,i,k,o2) V2(o1,c,o2,c)
   26 : (    2.00000000) D3(i,k,o2,k,o1,i) V2(o2,o1,a,c) kDelta(a,c)
   27 : (    1.00000000) D3(i,k,o2,o1,k,i) V2(o2,o1,a,a)
   28 : (    1.00000000) D3(i,k,o1,i,o2,k) V2(o1,o2,c,c)
   29 : (    1.00000000) D2(i,k,i,k) V2(a,c,a,c)
   30 : (    1.00000000) D2(i,k,k,i) V2(a,a,c,c)


< RESULT2 >
    0 : (    2.00000000) D2(i,i,k,k) h(c1,c1)
    1 : (    2.00000000) D2(i,k,k,i) h(c1,c1) kDelta(a,c) kDelta(a,c)
    2 : (    1.00000000) D3(i,i,k,k,o1,o2) h(o1,o2)
    3 : (    1.00000000) D3(i,k,k,i,o1,o2) h(o1,o2) kDelta(a,c) kDelta(a,c)
    4 : (    2.00000000) D2(i,k,k,i) h(a,c) kDelta(a,c)
    5 : (    1.00000000) D2(i,i,k,k) h(a,a)
    6 : (    1.00000000) D2(i,i,k,k) h(c,c)
    7 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,c2,c2)
    8 : (   -1.00000000) D2(i,i,k,k) V2(c1,c2,c1,c2)
    9 : (    2.00000000) D2(i,k,k,i) V2(c1,c1,c2,c2) kDelta(a,c) kDelta(a,c)
   10 : (   -1.00000000) D2(i,k,k,i) V2(c1,c2,c1,c2) kDelta(a,c) kDelta(a,c)
   11 : (    2.00000000) D3(i,i,k,k,o1,o2) V2(c1,c1,o1,o2)
   12 : (    2.00000000) D3(i,k,k,i,o1,o2) V2(c1,c1,o1,o2) kDelta(a,c) kDelta(a,
c)
   13 : (   -1.00000000) D3(i,i,k,k,o1,o2) V2(c1,o1,c1,o2)
   14 : (   -1.00000000) D3(i,k,k,i,o1,o2) V2(c1,o1,c1,o2) kDelta(a,c) kDelta(a,
c)
   15 : (    4.00000000) D2(i,k,k,i) V2(c1,c1,a,c) kDelta(a,c)
   16 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,a,a)
   17 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,c,c)
   18 : (   -2.00000000) D2(i,k,k,i) V2(c1,a,c1,c) kDelta(a,c)
   19 : (   -1.00000000) D2(i,i,k,k) V2(c1,a,c1,a)
   20 : (   -1.00000000) D2(i,i,k,k) V2(c1,c,c1,c)
   21 : (    0.50000000) D4(i,i,k,k,o1,o3,o2,o4) V2(o1,o3,o2,o4)
   22 : (    0.50000000) D4(i,k,k,i,o1,o3,o2,o4) V2(o1,o3,o2,o4) kDelta(a,c) kDe
lta(a,c)
   23 : (    2.00000000) D3(i,k,k,i,o1,o2) V2(o1,o2,a,c) kDelta(a,c)
   24 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,a,a)
   25 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,c,c)
```

```
   26 : (    2.00000000) D3(i,k,k,o1,o2,i) V2(o1,c,o2,a) kDelta(a,c)
   27 : (    1.00000000) D3(i,o1,k,k,o2,i) V2(o1,a,o2,a)
   28 : (    1.00000000) D3(i,i,k,o1,o2,k) V2(o1,c,o2,c)
   29 : (    1.00000000) D2(i,i,k,k) V2(a,a,c,c)
   30 : (    1.00000000) D2(i,k,k,i) V2(a,c,a,c)

< RESULT >
    0 : (    2.00000000) D2(i,i,k,k) h(c1,c1)
    1 : (    2.00000000) D2(i,k,k,i) h(c1,c1) kDelta(a,c) kDelta(a,c)
    2 : (    1.00000000) D3(i,i,k,k,o1,o2) h(o1,o2)
    3 : (    1.00000000) D3(i,k,k,i,o1,o2) h(o1,o2) kDelta(a,c) kDelta(a,c)
    4 : (    2.00000000) D2(i,k,k,i) h(a,c) kDelta(a,c)
    5 : (    1.00000000) D2(i,i,k,k) h(a,a)
    6 : (    1.00000000) D2(i,i,k,k) h(c,c)
    7 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,c2,c2)
    8 : (   -1.00000000) D2(i,i,k,k) V2(c1,c2,c1,c2)
    9 : (    2.00000000) D2(i,k,k,i) V2(c1,c1,c2,c2) kDelta(a,c) kDelta(a,c)
   10 : (   -1.00000000) D2(i,k,k,i) V2(c1,c2,c1,c2) kDelta(a,c) kDelta(a,c)
   11 : (    2.00000000) D3(i,i,k,k,o1,o2) V2(c1,c1,o1,o2)
   12 : (    2.00000000) D3(i,k,k,i,o1,o2) V2(c1,c1,o1,o2) kDelta(a,c) kDelta(a,
c)
   13 : (   -1.00000000) D3(i,i,k,k,o1,o2) V2(c1,o1,c1,o2)
   14 : (   -1.00000000) D3(i,k,k,i,o1,o2) V2(c1,o1,c1,o2) kDelta(a,c) kDelta(a,
c)
   15 : (    4.00000000) D2(i,k,k,i) V2(c1,c1,a,c) kDelta(a,c)
   16 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,a,a)
   17 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,c,c)
   18 : (   -2.00000000) D2(i,k,k,i) V2(c1,a,c1,c) kDelta(a,c)
   19 : (   -1.00000000) D2(i,i,k,k) V2(c1,a,c1,a)
   20 : (   -1.00000000) D2(i,i,k,k) V2(c1,c,c1,c)
   21 : (    0.50000000) D4(i,i,k,k,o1,o3,o2,o4) V2(o1,o3,o2,o4)
   22 : (    0.50000000) D4(i,k,k,i,o1,o3,o2,o4) V2(o1,o3,o2,o4) kDelta(a,c) kDe
lta(a,c)
   23 : (    2.00000000) D3(i,k,k,i,o1,o2) V2(o1,o2,a,c) kDelta(a,c)
   24 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,a,a)
   25 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,c,c)
   26 : (    2.00000000) D3(i,k,k,o1,o2,i) V2(o1,c,o2,a) kDelta(a,c)
   27 : (    1.00000000) D3(i,o1,k,k,o2,i) V2(o1,a,o2,a)
   28 : (    1.00000000) D3(i,i,k,o1,o2,k) V2(o1,c,o2,c)
   29 : (    1.00000000) D2(i,i,k,k) V2(a,a,c,c)
   30 : (    1.00000000) D2(i,k,k,i) V2(a,c,a,c)
Setting up parameters as default ....

       :::::::::: :::::::::::   :::   ::: :::::::::: ::::::::
      :+:        :+:         :+:+: :+:+:    :+:    :+:    :+:
     +:+        +:+        +:+ +:+:+ +:+   +:+    +:+    +:+
    :#::+::#   +#++:++#   +#+  +:+  +#+   +#+    +#+    +:+
   +#+        +#+        +#+       +#+   +#+    +#+    +#+
  #+#        #+#        #+#       #+#   #+#    #+#    #+#
 ###        ########## ###       ###   ###     ########


! * 16 terms are replaced in the linking process ....


The linked formulas ....
0 : (    2.00000000) Y0 D2(i,i,k,k)
1 : (    2.00000000) Y1 D2(i,k,k,i) kDelta(a,c) kDelta(a,c)
2 : (    1.00000000) D3(i,i,k,k,o1,o2) h(o1,o2)
3 : (    1.00000000) D3(i,k,k,i,o1,o2) h(o1,o2) kDelta(a,c) kDelta(a,c)
4 : (    2.00000000) D2(i,k,k,i) h(a,c) kDelta(a,c)
5 : (    1.00000000) D2(i,i,k,k) h(a,a)
6 : (    1.00000000) D2(i,i,k,k) h(c,c)
7 : (    2.00000000) Y2 D2(i,i,k,k)
8 : (   -1.00000000) Y3 D2(i,i,k,k)
9 : (    2.00000000) Y4 D2(i,k,k,i) kDelta(a,c) kDelta(a,c)
10 : (   -1.00000000) Y5 D2(i,k,k,i) kDelta(a,c) kDelta(a,c)
11 : (    2.00000000) D3(i,i,k,k,o1,o2) Y6(o1,o2)
12 : (    2.00000000) D3(i,k,k,i,o1,o2) Y7(o1,o2) kDelta(a,c) kDelta(a,c)
```



```
13 : (   -1.00000000) D3(i,i,k,k,o1,o2) Y8(o1,o2)
14 : (   -1.00000000) D3(i,k,k,i,o1,o2) Y9(o1,o2) kDelta(a,c) kDelta(a,c)
15 : (    4.00000000) D2(i,k,k,i) Y10(a,c) kDelta(a,c)
16 : (    2.00000000) D2(i,i,k,k) Y11(a,a)
17 : (    2.00000000) D2(i,i,k,k) Y12(c,c)
18 : (   -2.00000000) D2(i,k,k,i) Y13(a,c) kDelta(a,c)
19 : (   -1.00000000) D2(i,i,k,k) Y14(a,a)
20 : (   -1.00000000) D2(i,i,k,k) Y15(c,c)
21 : (    0.50000000) D4(i,i,k,k,o1,o3,o2,o4) V2(o1,o3,o2,o4)
22 : (    0.50000000) D4(i,k,k,i,o1,o3,o2,o4) V2(o1,o3,o2,o4) kDelta(a,c) kDelta
(a,c)
23 : (    2.00000000) D3(i,k,k,i,o1,o2) V2(o1,o2,a,c) kDelta(a,c)
24 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,a,a)
25 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,c,c)
26 : (    2.00000000) D3(i,k,k,o1,o2,i) V2(o1,c,o2,a) kDelta(a,c)
27 : (    1.00000000) D3(i,o1,k,k,o2,i) V2(o1,a,o2,a)
28 : (    1.00000000) D3(i,i,k,o1,o2,k) V2(o1,c,o2,c)
29 : (    1.00000000) D2(i,i,k,k) V2(a,a,c,c)
30 : (    1.00000000) D2(i,k,k,i) V2(a,c,a,c)

The content of each effective tensor ....
Y0 <-- (    1.00000000)  h(c1,c1)
Y1 <-- (    1.00000000)  h(c1,c1)
Y2 <-- (    1.00000000)  V2(c1,c1,c2,c2)
Y3 <-- (    1.00000000)  V2(c1,c2,c1,c2)
Y4 <-- (    1.00000000)  V2(c1,c1,c2,c2)
Y5 <-- (    1.00000000)  V2(c1,c2,c1,c2)
Y6 <-- (    1.00000000)  V2(c1,c1,o1,o2)
Y7 <-- (    1.00000000)  V2(c1,c1,o1,o2)
Y8 <-- (    1.00000000)  V2(c1,o1,c1,o2)
Y9 <-- (    1.00000000)  V2(c1,o1,c1,o2)
Y10 <-- (    1.00000000)  V2(c1,c1,a,c)
Y11 <-- (    1.00000000)  V2(c1,c1,a,a)
Y12 <-- (    1.00000000)  V2(c1,c1,c,c)
Y13 <-- (    1.00000000)  V2(c1,a,c1,c)
Y14 <-- (    1.00000000)  V2(c1,a,c1,a)
Y15 <-- (    1.00000000)  V2(c1,c,c1,c)


! No.0
! Hdiag(i,k,a,c)  <--
! (    2.00000000) Y0 D2(i,i,k,k)
! * Begin scaling analysis .... *

Declare Y0 as a scalar

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) += 2 Y0 sum() D2(i,i,k,k)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.1
! Hdiag(i,k,a,c)  <--
! (    2.00000000) Y1 D2(i,k,k,i) kDelta(a,c) kDelta(a,c)
! Kronecker's delta removed.
! * Begin scaling analysis .... *

Declare Y1 as a scalar

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, a) += 2 Y1 sum() D2(i,k,k,i)
  Accumulate Hdiag_(a)(i,k,a) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------
```

```
! No.2
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D3(i,i,k,k,o1,o2) h(o1,o2)
! * Begin scaling analysis .... *

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) +=  sum(o1,o2) D3(i,i,k,k,o1,o2) * h(o1,o2)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.3
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D3(i,k,k,i,o1,o2) h(o1,o2) kDelta(a,c) kDelta(a,c)
! Kronecker's delta removed.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, a) +=  sum(o1,o2) D3(i,k,k,i,o1,o2) * h(o1,o2)
  Accumulate Hdiag_(a)(i,k,a) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.4
! Hdiag(i,k,a,c)  <--
! (    2.00000000) D2(i,k,k,i) h(a,c) kDelta(a,c)
! Kronecker's delta removed.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, a) += 2  sum() D2(i,k,k,i) * h(a,a)
  Accumulate Hdiag_(a)(i,k,a) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.5
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D2(i,i,k,k) h(a,a)
! * Begin scaling analysis .... *

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) +=  sum() D2(i,i,k,k) * h(a,a)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.6
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D2(i,i,k,k) h(c,c)
! * Begin scaling analysis .... *

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) +=  sum() D2(i,i,k,k) * h(c,c)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.7
```



```
! Hdiag(i,k,a,c)  <--
! (    2.00000000) Y2 D2(i,i,k,k)
! * Begin scaling analysis .... *

Declare Y2 as a scalar
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) += 2 Y2 sum() D2(i,i,k,k)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.8
! Hdiag(i,k,a,c)  <--
! (   -1.00000000) Y3 D2(i,i,k,k)
! * Begin scaling analysis .... *

Declare Y3 as a scalar
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) += Y3 sum() D2(i,i,k,k)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.9
! Hdiag(i,k,a,c)  <--
! (    2.00000000) Y4 D2(i,k,k,i) kDelta(a,c) kDelta(a,c)
! Kronecker's delta removed.
! * Begin scaling analysis .... *

Declare Y4 as a scalar
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, a) += 2 Y4 sum() D2(i,k,k,i)
  Accumulate Hdiag_(a)(i,k,a) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.10
! Hdiag(i,k,a,c)  <--
! (   -1.00000000) Y5 D2(i,k,k,i) kDelta(a,c) kDelta(a,c)
! Kronecker's delta removed.
! * Begin scaling analysis .... *

Declare Y5 as a scalar
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, a) += Y5 sum() D2(i,k,k,i)
  Accumulate Hdiag_(a)(i,k,a) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------
```

```
! No.11
! Hdiag(i,k,a,c)  <--
! (    2.00000000) D3(i,i,k,k,o1,o2) Y6(o1,o2)
! * Begin scaling analysis .... *

Declare Y6 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) += 2  sum(o1,o2) D3(i,i,k,k,o1,o2) * Y6(o1,o2)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.12
! Hdiag(i,k,a,c)  <--
! (    2.00000000) D3(i,k,k,i,o1,o2) Y7(o1,o2) kDelta(a,c) kDelta(a,c)
! Kronecker's delta removed.
! * Begin scaling analysis .... *

Declare Y7 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, a) += 2  sum(o1,o2) D3(i,k,k,i,o1,o2) * Y7(o1,o2)
  Accumulate Hdiag_(a)(i,k,a) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.13
! Hdiag(i,k,a,c)  <--
! (   -1.00000000) D3(i,i,k,k,o1,o2) Y8(o1,o2)
! * Begin scaling analysis .... *

Declare Y8 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) +=  sum(o1,o2) D3(i,i,k,k,o1,o2) * Y8(o1,o2)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.14
! Hdiag(i,k,a,c)  <--
! (   -1.00000000) D3(i,k,k,i,o1,o2) Y9(o1,o2) kDelta(a,c) kDelta(a,c)
! Kronecker's delta removed.
! * Begin scaling analysis .... *

Declare Y9 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, a) +=  sum(o1,o2) D3(i,k,k,i,o1,o2) * Y9(o1,o2)
  Accumulate Hdiag_(a)(i,k,a) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------
```



```
! No.15
! Hdiag(i,k,a,c)  <--
! (    4.00000000) D2(i,k,k,i) Y10(a,c) kDelta(a,c)
! Kronecker's delta removed.
! * Begin scaling analysis .... *

Declare Y10 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, a) += 4  sum() D2(i,k,k,i) * Y10(a,a)
  Accumulate Hdiag_(a)(i,k,a) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.16
! Hdiag(i,k,a,c)  <--
! (    2.00000000) D2(i,i,k,k) Y11(a,a)
! * Begin scaling analysis .... *

Declare Y11 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) += 2  sum() D2(i,i,k,k) * Y11(a,a)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.17
! Hdiag(i,k,a,c)  <--
! (    2.00000000) D2(i,i,k,k) Y12(c,c)
! * Begin scaling analysis .... *

Declare Y12 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) += 2  sum() D2(i,i,k,k) * Y12(c,c)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.18
! Hdiag(i,k,a,c)  <--
! (   -2.00000000) D2(i,k,k,i) Y13(a,c) kDelta(a,c)
! Kronecker's delta removed.
! * Begin scaling analysis .... *

Declare Y13 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, a) += -2  sum() D2(i,k,k,i) * Y13(a,a)
  Accumulate Hdiag_(a)(i,k,a) for a

! ---------------------------------------------------------------------------
```

```
! ----------------------------------------------------------------------

! No.19
! Hdiag(i,k,a,c)  <--
! (   -1.00000000) D2(i,i,k,k) Y14(a,a)
! * Begin scaling analysis .... *

Declare Y14 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) +=  sum() D2(i,i,k,k) * Y14(a,a)
  Accumulate Hdiag_(c)(i,k,a) for c

! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.20
! Hdiag(i,k,a,c)  <--
! (   -1.00000000) D2(i,i,k,k) Y15(c,c)
! * Begin scaling analysis .... *

Declare Y15 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read Hdiag from GA for c
  Hdiag_(c)(i, k, a) +=  sum() D2(i,i,k,k) * Y15(c,c)
  Accumulate Hdiag_(c)(i,k,a) for c

! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.21
! Hdiag(i,k,a,c)  <--
! (    0.50000000) D4(i,i,k,k,o1,o3,o2,o4) V2(o1,o3,o2,o4)
! Indices of ERI and D4 are rotated to match with each other.
! * Begin scaling analysis .... *

for o1 in {occ}:
  Read V2 from GA for o1
  for o3 in {occ}:
    for c in {vir}:
      Read Hdiag from GA for c
      Read D4 from GA for o1, o3
      Hdiag_(c)(i, k, a) += 0.5  sum(o2,o4) V2(,o3,o2,o4) * D4(,,i,i,k,k,o2,o4)
      Accumulate Hdiag_(c)(i,k,a) for c

! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.22
! Hdiag(i,k,a,c)  <--
! (    0.50000000) D4(i,k,k,i,o1,o3,o2,o4) V2(o1,o3,o2,o4) kDelta(a,c) kDelta(a,
c)
! Kronecker's delta removed.
! Indices of ERI and D4 are rotated to match with each other.
! * Begin scaling analysis .... *

for o1 in {occ}:
  Read V2 from GA for o1
  for o3 in {occ}:
    for a in {vir}:
      Read Hdiag from GA for a
      Read D4 from GA for o1, o3
      Hdiag_(a)(i, k, a) += 0.5  sum(o2,o4) V2(,o3,o2,o4) * D4(,,i,k,k,i,o2,o4)
```



```
      Accumulate Hdiag_(a)(i,k,a) for a

! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.23
! Hdiag(i,k,a,c)  <--
! (    2.00000000) D3(i,k,k,i,o1,o2) V2(o1,o2,a,c) kDelta(a,c)
! Kronecker's delta removed.
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  Hdiag_(a)(i, k, a) += 2  sum(o1,o2) V2(,a,o1,o2) * D3(i,k,k,i,o1,o2)
  Accumulate Hdiag_(a)(i,k,a) for a

! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.24
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,a,a)
! The indices of ERI are rotated to became virtual.
! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  for c in {vir}:
    Read Hdiag from GA for c
    Hdiag_(c)(i, k, a) +=  sum(o1,o2) V2(,a,o1,o2) * D3(i,i,k,k,o1,o2)
    Accumulate Hdiag_(c)(i,k,a) for c

! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.25
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,c,c)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for c in {vir}:
  Read Hdiag from GA for c
  Read V2 from GA for c
  Hdiag_(c)(i, k, a) +=  sum(o1,o2) V2(,c,o1,o2) * D3(i,i,k,k,o1,o2)
  Accumulate Hdiag_(c)(i,k,a) for c

! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.26
! Hdiag(i,k,a,c)  <--
! (    2.00000000) D3(i,k,k,o1,o2,i) V2(o1,c,o2,a) kDelta(a,c)
! Kronecker's delta removed.
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  Hdiag_(a)(i, k, a) += 2  sum(o1,o2) V2(,o1,o2,a) * D3(i,k,k,o1,o2,i)
  Accumulate Hdiag_(a)(i,k,a) for a

! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.27
```

```
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D3(i,o1,k,k,o2,i) V2(o1,a,o2,a)
! The indices of ERI are rotated to became virtual.
! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  for c in {vir}:
    Read Hdiag from GA for c
    Hdiag_(c)(i, k, a) +=  sum(o1,o2) V2(,o1,o2,a) * D3(i,o1,k,k,o2,i)
    Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.28
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D3(i,i,k,o1,o2,k) V2(o1,c,o2,c)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for c in {vir}:
  Read Hdiag from GA for c
  Read V2 from GA for c
  Hdiag_(c)(i, k, a) +=  sum(o1,o2) V2(,o1,o2,c) * D3(i,i,k,o1,o2,k)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.29
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D2(i,i,k,k) V2(a,a,c,c)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for c in {vir}:
  Read Hdiag from GA for c
  Read V2 from GA for c
  Hdiag_(c)(i, k, a) +=  sum() V2(,c,a,a) * D2(i,i,k,k)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.30
! Hdiag(i,k,a,c)  <--
! (    1.00000000) D2(i,k,k,i) V2(a,c,a,c)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for c in {vir}:
  Read Hdiag from GA for c
  Read V2 from GA for c
  Hdiag_(c)(i, k, a) +=  sum() V2(,a,a,c) * D2(i,k,k,i)
  Accumulate Hdiag_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

* 2 L:ooov/R:ooov

(    0.50000000) V2(c1,c2,c3,c4) E5(c1,c2,i,k,m,c3,c4,m,k,i)
(    0.50000000) V2(c1,c2,c3,c4) E4(c1,c2,i,k,c3,c4,i,k)
(   -0.50000000) V2(c1,c2,c3,c4) E5(c1,c2,i,k,m,c3,c4,m,k,i)
(   -0.50000000) V2(c1,c2,c3,c4) E4(c1,c2,i,k,c3,c4,i,k)
(    0.50000000) V2(c1,o1,c2,o2) E5(c1,i,k,m,o1,c2,m,k,i,o2)
(    0.50000000) V2(c1,o1,c2,o2) E4(c1,i,k,o1,c2,i,k,o2)
(    0.50000000) V2(c1,m,c2,o1) E4(c1,i,k,m,c2,o1,k,i)
(    0.50000000) V2(c1,m,c2,o1) E3(c1,i,k,c2,o1,k)
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(    0.50000000) V2(c1,m,c2,o1) E4(c1,i,k,o1,c2,m,k,i)
(    0.50000000) V2(c1,m,c2,m) E3(c1,i,k,c2,i,k)
(   -0.50000000) V2(c1,o1,c2,o2) E5(c1,i,k,m,o1,c2,m,k,i,o2)
(   -0.50000000) V2(c1,o1,c2,o2) E4(c1,i,k,o1,c2,i,k,o2)
(   -0.50000000) V2(c1,m,c2,o1) E4(c1,i,k,m,c2,o1,k,i)
(   -0.50000000) V2(c1,i,c2,o1) E4(c1,i,k,m,c2,m,k,o1)
(   -0.50000000) V2(c1,i,c2,o1) E3(c1,i,k,c2,o1,k)
(   -0.50000000) V2(c1,k,c2,o1) E4(c1,i,k,m,c2,m,o1,i)
(   -0.50000000) V2(c1,k,c2,o1) E3(c1,i,k,c2,i,o1)
(    0.50000000) V2(c1,c2,o2,o1) E5(c1,i,k,m,o1,o2,m,k,i,c2)
(    0.50000000) V2(c1,c2,o2,o1) E4(c1,i,k,o1,o2,i,k,c2)
(    0.50000000) V2(c1,c2,o1,m) E4(c1,i,k,m,o1,c2,k,i)
(    0.50000000) V2(c1,c2,m,o1) E4(c1,i,k,o1,i,m,k,c2)
(    0.50000000) V2(c1,c2,m,m) E3(c1,i,k,i,c2,k)
(   -0.50000000) V2(c1,c2,o2,o1) E5(c1,i,k,m,o1,o2,m,k,i,c2)
(   -0.50000000) V2(c1,c2,o2,o1) E4(c1,i,k,o1,o2,i,k,c2)
(   -0.50000000) V2(c1,c2,o1,m) E4(c1,i,k,m,o1,c2,k,i)
(   -0.50000000) V2(c1,c2,o1,i) E4(c1,i,k,m,o1,m,k,c2)
(   -0.50000000) V2(c1,c2,o1,i) E3(c1,i,k,o1,c2,k)
(   -0.50000000) V2(c1,c2,o1,k) E4(c1,i,k,m,o1,m,c2,i)
(   -0.50000000) V2(c1,c2,o1,k) E3(c1,i,k,o1,i,c2)
(    0.50000000) V2(c1,a,c2,a) E4(c1,i,k,m,c2,m,k,i)
(    0.50000000) V2(c1,a,c2,a) E3(c1,i,k,c2,i,k)
(    0.50000000) V2(c1,c2,a,a) E4(c1,i,k,m,k,m,c2,i)
(    0.50000000) V2(c1,c2,a,a) E3(c1,i,k,k,i,c2)
(    0.50000000) V2(c1,c2,o2,o1) E5(c1,i,k,m,o1,o2,m,k,i,c2)
(    0.50000000) V2(c1,c2,o2,o1) E4(c1,i,k,o1,o2,i,k,c2)
(    0.50000000) V2(c1,c2,o1,m) E4(c1,i,k,m,o1,c2,k,i)
(    0.50000000) V2(c1,c2,m,o1) E4(c1,i,k,o1,i,m,k,c2)
(    0.50000000) V2(c1,c2,m,m) E3(c1,i,k,i,c2,k)
(   -0.50000000) V2(c1,c2,o2,o1) E5(c1,i,k,m,o1,o2,m,k,i,c2)
(   -0.50000000) V2(c1,c2,o2,o1) E4(c1,i,k,o1,o2,i,k,c2)
(   -0.50000000) V2(c1,c2,o1,m) E4(c1,i,k,m,o1,c2,k,i)
(   -0.50000000) V2(c1,c2,o1,i) E4(c1,i,k,m,o1,m,k,c2)
(   -0.50000000) V2(c1,c2,o1,i) E3(c1,i,k,o1,c2,k)
(   -0.50000000) V2(c1,c2,o1,k) E4(c1,i,k,m,o1,m,c2,i)
(   -0.50000000) V2(c1,c2,o1,k) E3(c1,i,k,o1,i,c2)
(    0.50000000) V2(c1,o1,c2,o2) E5(c1,i,k,m,o1,c2,m,k,i,o2)
(    0.50000000) V2(c1,o1,c2,o2) E4(c1,i,k,o1,c2,i,k,o2)
(    0.50000000) V2(c1,m,c2,o1) E4(c1,i,k,m,c2,o1,k,i)
(    0.50000000) V2(c1,m,c2,o1) E4(c1,i,k,o1,c2,m,k,i)
(    0.50000000) V2(c1,m,c2,m) E3(c1,i,k,c2,i,k)
(   -0.50000000) V2(c1,o1,c2,o2) E5(c1,i,k,m,o1,c2,m,k,i,o2)
(   -0.50000000) V2(c1,o1,c2,o2) E4(c1,i,k,o1,c2,i,k,o2)
(   -0.50000000) V2(c1,m,c2,o1) E4(c1,i,k,m,c2,o1,k,i)
(   -0.50000000) V2(c1,i,c2,o1) E4(c1,i,k,m,c2,m,k,o1)
(   -0.50000000) V2(c1,i,c2,o1) E3(c1,i,k,c2,o1,k)
(   -0.50000000) V2(c1,k,c2,o1) E4(c1,i,k,m,c2,m,o1,i)
(   -0.50000000) V2(c1,k,c2,o1) E3(c1,i,k,c2,i,o1)
(    0.50000000) V2(o1,o2,o3,o4) E5(i,k,m,o1,o2,m,k,i,o3,o4)
(    0.50000000) V2(o1,o2,o3,o4) E4(i,k,o1,o2,i,k,o3,o4)
(    0.50000000) V2(m,o1,o2,o3) E4(i,k,m,o1,o2,k,i,o3)
(    0.50000000) V2(m,o1,o3,o2) E4(i,k,m,o1,o3,k,i,o2)
(    0.50000000) V2(m,o2,o1,o3) E4(i,k,o1,o2,m,k,i,o3)
(    0.50000000) V2(m,o1,m,o2) E3(i,k,o1,i,k,o2)
(    0.50000000) V2(m,m,o1,o2) E3(i,k,o1,o2,k,i)
(    0.50000000) V2(m,o1,o2,o3) E4(i,k,o1,o2,m,k,o3,i)
(    0.50000000) V2(m,m,o1,o2) E3(i,k,o1,o2,k,i)
(    0.50000000) V2(m,o1,m,o2) E3(i,k,o1,i,k,o2)
(   -0.50000000) V2(o1,o2,o3,o4) E5(i,k,m,o1,o2,m,k,i,o3,o4)
(   -0.50000000) V2(o1,o2,o3,o4) E4(i,k,o1,o2,i,k,o3,o4)
(   -0.50000000) V2(m,o1,o2,o3) E4(i,k,m,o1,o2,k,i,o3)
(   -0.50000000) V2(m,o1,o3,o2) E4(i,k,m,o1,o3,k,i,o2)
(   -0.50000000) V2(i,o1,o2,o3) E4(i,k,m,o1,m,k,o2,o3)
(   -0.50000000) V2(i,o1,o2,o3) E3(i,k,o1,o2,k,o3)
(   -0.50000000) V2(i,m,o1,o2) E3(i,k,m,o2,k,o1)
(   -0.50000000) V2(i,o1,o3,o2) E4(i,k,m,o1,m,k,o3,o2)
(   -0.50000000) V2(i,o1,o3,o2) E3(i,k,o1,o3,k,o2)
(   -0.50000000) V2(i,m,o2,o1) E3(i,k,m,o1,k,o2)
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(   -0.50000000) V2(k,o1,o2,o3) E4(i,k,m,o1,m,o2,i,o3)
(   -0.50000000) V2(k,o1,o2,o3) E3(i,k,o1,i,o2,o3)
(   -0.50000000) V2(k,m,o1,o2) E3(i,k,m,o2,o1,i)
(   -0.50000000) V2(k,o1,o3,o2) E4(i,k,m,o1,m,o3,i,o2)
(   -0.50000000) V2(k,o1,o3,o2) E3(i,k,o1,i,o3,o2)
(   -0.50000000) V2(k,m,o2,o1) E3(i,k,m,o1,o2,i)
(   -0.50000000) V2(i,k,o1,o2) E3(i,k,m,m,o2,o1)
(   -0.50000000) V2(i,k,o1,o2) E2(i,k,o1,o2)
(   -0.50000000) V2(i,k,o2,o1) E3(i,k,m,m,o1,o2)
(   -0.50000000) V2(i,k,o2,o1) E2(i,k,o2,o1)
(    0.50000000) V2(o1,a,o2,a) E4(i,k,m,o1,m,k,i,o2)
(    0.50000000) V2(o1,a,o2,a) E3(i,k,o1,i,k,o2)
(    0.50000000) V2(m,a,o1,a) E3(i,k,m,o1,k,i)
(    0.50000000) V2(m,a,o1,a) E3(i,k,o1,m,k,i)
(    0.50000000) V2(m,a,m,a) E2(i,k,i,k)
(    0.50000000) V2(o1,o2,a,a) E4(i,k,m,o1,m,o2,i,k)
(    0.50000000) V2(o1,o2,a,a) E3(i,k,o1,i,o2,k)
(    0.50000000) V2(m,o1,a,a) E3(i,k,m,k,o1,i)
(    0.50000000) V2(m,o1,a,a) E3(i,k,o1,m,i,k)
(    0.50000000) V2(m,m,a,a) E2(i,k,k,i)
(    0.50000000) V2(c1,c2,a,a) E4(c1,i,k,m,k,m,c2,i)
(    0.50000000) V2(c1,c2,a,a) E3(c1,i,k,k,i,c2)
(    0.50000000) V2(c1,a,c2,a) E4(c1,i,k,m,c2,m,k,i)
(    0.50000000) V2(c1,a,c2,a) E3(c1,i,k,c2,i,k)
(    0.50000000) V2(o1,o2,a,a) E4(i,k,m,o1,m,o2,i,k)
(    0.50000000) V2(o1,o2,a,a) E3(i,k,o1,i,o2,k)
(    0.50000000) V2(m,o1,a,a) E3(i,k,m,k,o1,i)
(    0.50000000) V2(m,o1,a,a) E3(i,k,o1,m,i,k)
(    0.50000000) V2(m,m,a,a) E2(i,k,k,i)
(    0.50000000) V2(o1,a,o2,a) E4(i,k,m,o1,m,k,i,o2)
(    0.50000000) V2(o1,a,o2,a) E3(i,k,o1,i,k,o2)
(    0.50000000) V2(m,a,o1,a) E3(i,k,m,o1,k,i)
(    0.50000000) V2(m,a,o1,a) E3(i,k,o1,m,k,i)
(    0.50000000) V2(m,a,m,a) E2(i,k,i,k)
(    1.00000000) Ecas E3(i,k,m,m,k,i)
(    1.00000000) Ecas E2(i,k,i,k)

Decompose RDMs .....


< RESULT >
    0 : (    1.00000000) D3(i,k,m,o1,k,i) h(m,o1)
    1 : (    1.00000000) D2(i,k,i,k) h(m,m)
    2 : (   -1.00000000) D3(i,k,m,m,k,o1) h(i,o1)
    3 : (   -1.00000000) D2(i,k,o1,k) h(i,o1)
    4 : (   -1.00000000) D3(i,k,m,m,o1,i) h(k,o1)
    5 : (   -1.00000000) D2(i,k,i,o1) h(k,o1)
    6 : (    1.00000000) D3(i,k,m,m,k,i) h(a,a)
    7 : (    1.00000000) D2(i,k,i,k) h(a,a)
    8 : (    2.00000000) D3(i,k,m,o1,k,i) V2(c1,m,c1,o1)
    9 : (    2.00000000) D2(i,k,i,k) V2(c1,m,c1,m)
   10 : (   -2.00000000) D3(i,k,m,m,k,o1) V2(c1,i,c1,o1)
   11 : (   -2.00000000) D2(i,k,o1,k) V2(c1,i,c1,o1)
   12 : (   -2.00000000) D3(i,k,m,m,o1,i) V2(c1,k,c1,o1)
   13 : (   -2.00000000) D2(i,k,i,o1) V2(c1,k,c1,o1)
   14 : (   -1.00000000) D3(i,k,m,o1,k,i) V2(c1,c1,m,o1)
   15 : (   -1.00000000) D2(i,k,i,k) V2(c1,c1,m,m)
   16 : (    1.00000000) D3(i,k,m,m,k,o1) V2(c1,c1,i,o1)
   17 : (    1.00000000) D2(i,k,o1,k) V2(c1,c1,i,o1)
   18 : (    1.00000000) D3(i,k,m,m,o1,i) V2(c1,c1,k,o1)
   19 : (    1.00000000) D2(i,k,i,o1) V2(c1,c1,k,o1)
   20 : (    2.00000000) D3(i,k,m,m,k,i) V2(c1,a,c1,a)
   21 : (    2.00000000) D2(i,k,i,k) V2(c1,a,c1,a)
   22 : (   -1.00000000) D3(i,k,m,m,k,i) V2(c1,c1,a,a)
   23 : (   -1.00000000) D2(i,k,i,k) V2(c1,c1,a,a)
   24 : (    1.00000000) D4(i,k,m,o3,o2,k,i,o1) V2(m,o3,o2,o1)
   25 : (    1.00000000) D3(i,k,o2,i,k,o1) V2(m,o2,m,o1)
   26 : (    1.00000000) D3(i,k,o2,o1,k,i) V2(m,m,o2,o1)
   27 : (   -1.00000000) D4(i,k,m,o3,m,k,o2,o1) V2(i,o3,o2,o1)
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   28 : (   -1.00000000) D3(i,k,o3,o2,k,o1) V2(i,o3,o2,o1)
   29 : (   -1.00000000) D3(i,k,m,o2,k,o1) V2(i,m,o1,o2)
   30 : (   -1.00000000) D4(i,k,m,o3,m,o2,i,o1) V2(k,o3,o2,o1)
   31 : (   -1.00000000) D3(i,k,o3,i,o2,o1) V2(k,o3,o2,o1)
   32 : (   -1.00000000) D3(i,k,m,o2,o1,i) V2(k,m,o1,o2)
   33 : (   -1.00000000) D3(i,k,m,m,o2,o1) V2(i,k,o1,o2)
   34 : (   -1.00000000) D2(i,k,o2,o1) V2(i,k,o2,o1)
   35 : (    1.00000000) D4(i,k,m,o1,m,k,i,o2) V2(o1,a,o2,a)
   36 : (    1.00000000) D3(i,k,o2,i,k,o1) V2(o2,a,o1,a)
   37 : (    2.00000000) D3(i,k,m,o1,k,i) V2(m,a,o1,a)
   38 : (    1.00000000) D2(i,k,i,k) V2(m,a,m,a)
   39 : (    1.00000000) D4(i,k,m,o1,m,o2,i,k) V2(o1,o2,a,a)
   40 : (    1.00000000) D3(i,k,o2,i,o1,k) V2(o2,o1,a,a)
   41 : (    2.00000000) D3(i,k,m,k,o1,i) V2(m,o1,a,a)
   42 : (    1.00000000) D2(i,k,k,i) V2(m,m,a,a)
   43 : (    1.00000000) Ecas D3(i,k,m,m,k,i)
   44 : (    1.00000000) Ecas D2(i,k,i,k)


< RESULT2 >
    0 : (    1.00000000) D3(i,m,k,k,o1,i) h(m,o1)
    1 : (    1.00000000) D2(i,i,k,k) h(m,m)
    2 : (   -1.00000000) D3(i,m,k,k,m,o1) h(i,o1)
    3 : (   -1.00000000) D2(i,o1,k,k) h(i,o1)
    4 : (   -1.00000000) D3(i,m,k,o1,m,i) h(k,o1)
    5 : (   -1.00000000) D2(i,i,k,o1) h(k,o1)
    6 : (    1.00000000) D3(i,m,k,k,m,i) h(a,a)
    7 : (    1.00000000) D2(i,i,k,k) h(a,a)
    8 : (    2.00000000) D3(i,m,k,k,o1,i) V2(c1,c1,m,o1)
    9 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,m,m)
   10 : (   -2.00000000) D3(i,m,k,k,m,o1) V2(c1,c1,i,o1)
   11 : (   -2.00000000) D2(i,o1,k,k) V2(c1,c1,i,o1)
   12 : (   -2.00000000) D3(i,m,k,o1,m,i) V2(c1,c1,k,o1)
   13 : (   -2.00000000) D2(i,i,k,o1) V2(c1,c1,k,o1)
   14 : (   -1.00000000) D3(i,m,k,k,o1,i) V2(c1,m,c1,o1)
   15 : (   -1.00000000) D2(i,i,k,k) V2(c1,m,c1,m)
   16 : (    1.00000000) D3(i,m,k,k,m,o1) V2(c1,i,c1,o1)
   17 : (    1.00000000) D2(i,o1,k,k) V2(c1,i,c1,o1)
   18 : (    1.00000000) D3(i,m,k,o1,m,i) V2(c1,k,c1,o1)
   19 : (    1.00000000) D2(i,i,k,o1) V2(c1,k,c1,o1)
   20 : (    2.00000000) D3(i,m,k,k,m,i) V2(c1,c1,a,a)
   21 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,a,a)
   22 : (   -1.00000000) D3(i,m,k,k,m,i) V2(c1,a,c1,a)
   23 : (   -1.00000000) D2(i,i,k,k) V2(c1,a,c1,a)
   24 : (    1.00000000) D4(i,m,k,k,o1,o3,o2,i) V2(m,o2,o1,o3)
   25 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(m,m,o1,o2)
   26 : (    1.00000000) D3(i,o1,k,k,o2,i) V2(m,o1,m,o2)
   27 : (   -1.00000000) D4(i,m,k,k,m,o2,o3,o1) V2(i,o2,o1,o3)
   28 : (   -1.00000000) D3(i,o2,k,k,o3,o1) V2(i,o2,o1,o3)
   29 : (   -1.00000000) D3(i,o2,k,k,m,o1) V2(i,o1,m,o2)
   30 : (   -1.00000000) D4(i,m,k,o2,m,i,o3,o1) V2(k,o2,o1,o3)
   31 : (   -1.00000000) D3(i,i,k,o2,o3,o1) V2(k,o2,o1,o3)
   32 : (   -1.00000000) D3(i,m,o1,k,o2,i) V2(k,o1,m,o2)
   33 : (   -1.00000000) D3(i,m,k,o2,m,o1) V2(i,o1,k,o2)
   34 : (   -1.00000000) D2(i,o2,k,o1) V2(i,o2,k,o1)
   35 : (    1.00000000) D4(i,m,k,k,m,i,o1,o2) V2(o1,o2,a,a)
   36 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,a,a)
   37 : (    2.00000000) D3(i,m,k,k,o1,i) V2(m,o1,a,a)
   38 : (    1.00000000) D2(i,i,k,k) V2(m,m,a,a)
   39 : (    1.00000000) D4(i,m,k,o1,m,i,o2,k) V2(o1,a,o2,a)
   40 : (    1.00000000) D3(i,i,k,o1,o2,k) V2(o1,a,o2,a)
   41 : (    2.00000000) D3(i,k,k,o1,m,i) V2(m,a,o1,a)
   42 : (    1.00000000) D2(i,k,k,i) V2(m,a,m,a)
   43 : (    1.00000000) Ecas D3(i,m,k,k,m,i)
   44 : (    1.00000000) Ecas D2(i,i,k,k)

< RESULT >
    0 : (    1.00000000) D3(i,m,k,k,o1,i) h(m,o1)
    1 : (    1.00000000) D2(i,i,k,k) h(m,m)
```

```
    2 : (   -1.00000000) D3(i,m,k,k,m,o1) h(i,o1)
    3 : (   -1.00000000) D2(i,o1,k,k) h(i,o1)
    4 : (   -1.00000000) D3(i,m,k,o1,m,i) h(k,o1)
    5 : (   -1.00000000) D2(i,i,k,o1) h(k,o1)
    6 : (    1.00000000) D3(i,m,k,k,m,i) h(a,a)
    7 : (    1.00000000) D2(i,i,k,k) h(a,a)
    8 : (    2.00000000) D3(i,m,k,k,o1,i) V2(c1,c1,m,o1)
    9 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,m,m)
   10 : (   -2.00000000) D3(i,m,k,k,m,o1) V2(c1,c1,i,o1)
   11 : (   -2.00000000) D2(i,o1,k,k) V2(c1,c1,i,o1)
   12 : (   -2.00000000) D3(i,m,k,o1,m,i) V2(c1,c1,k,o1)
   13 : (   -2.00000000) D2(i,i,k,o1) V2(c1,c1,k,o1)
   14 : (   -1.00000000) D3(i,m,k,k,o1,i) V2(c1,m,c1,o1)
   15 : (   -1.00000000) D2(i,i,k,k) V2(c1,m,c1,m)
   16 : (    1.00000000) D3(i,m,k,k,m,o1) V2(c1,i,c1,o1)
   17 : (    1.00000000) D2(i,o1,k,k) V2(c1,i,c1,o1)
   18 : (    1.00000000) D3(i,m,k,o1,m,i) V2(c1,k,c1,o1)
   19 : (    1.00000000) D2(i,i,k,o1) V2(c1,k,c1,o1)
   20 : (    2.00000000) D3(i,m,k,k,m,i) V2(c1,c1,a,a)
   21 : (    2.00000000) D2(i,i,k,k) V2(c1,c1,a,a)
   22 : (   -1.00000000) D3(i,m,k,k,m,i) V2(c1,a,c1,a)
   23 : (   -1.00000000) D2(i,i,k,k) V2(c1,a,c1,a)
   24 : (    1.00000000) D4(i,m,k,k,o1,o3,o2,i) V2(m,o2,o1,o3)
   25 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(m,m,o1,o2)
   26 : (    1.00000000) D3(i,o1,k,k,o2,i) V2(m,o1,m,o2)
   27 : (   -1.00000000) D4(i,m,k,k,m,o2,o3,o1) V2(i,o2,o1,o3)
   28 : (   -1.00000000) D3(i,o2,k,k,o3,o1) V2(i,o2,o1,o3)
   29 : (   -1.00000000) D3(i,o2,k,k,m,o1) V2(i,o1,m,o2)
   30 : (   -1.00000000) D4(i,m,k,o2,m,i,o3,o1) V2(k,o2,o1,o3)
   31 : (   -1.00000000) D3(i,i,k,o2,o3,o1) V2(k,o2,o1,o3)
   32 : (   -1.00000000) D3(i,m,o1,k,o2,i) V2(k,o1,m,o2)
   33 : (   -1.00000000) D3(i,m,k,o2,m,o1) V2(i,o1,k,o2)
   34 : (   -1.00000000) D2(i,o2,k,o1) V2(i,o2,k,o1)
   35 : (    1.00000000) D4(i,m,k,k,m,i,o1,o2) V2(o1,o2,a,a)
   36 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,a,a)
   37 : (    2.00000000) D3(i,m,k,k,o1,i) V2(m,o1,a,a)
   38 : (    1.00000000) D2(i,i,k,k) V2(m,m,a,a)
   39 : (    1.00000000) D4(i,m,k,o1,m,i,o2,k) V2(o1,a,o2,a)
   40 : (    1.00000000) D3(i,i,k,o1,o2,k) V2(o1,a,o2,a)
   41 : (    2.00000000) D3(i,k,k,o1,m,i) V2(m,a,o1,a)
   42 : (    1.00000000) D2(i,k,k,i) V2(m,a,m,a)
   43 : (    1.00000000) Ecas D3(i,m,k,k,m,i)
   44 : (    1.00000000) Ecas D2(i,i,k,k)
Setting up parameters as default ....

 8 8888888888   8 8888888888            ,8.       ,8.    8888888 8888888888 ,o88
8888o.
 8 8888         8 8888                 ,888.     ,888.         8 8888    . 8888
   ‘88.
 8 8888         8 8888                .‘8888.   .‘8888.        8 8888   ,8 8888
     ‘8b
 8 8888         8 8888               ,8.‘8888. ,8.‘8888.       8 8888   88 8888
      ‘8b
 8 888888888888 8 888888888888      ,8’8.‘8888,8^8.‘8888.      8 8888   88 8888
       88
 8 8888         8 8888             ,8’ ‘8.‘8888’ ‘8.‘8888.     8 8888   88 8888
       88
 8 8888         8 8888            ,8’   ‘8.‘88’   ‘8.‘8888.    8 8888   88 8888
     ,8P
 8 8888         8 8888           ,8’     ‘8.‘’     ‘8.‘8888.   8 8888   ‘8 8888
     ,8P
 8 8888         8 8888          ,8’       ‘8        ‘8.‘8888.  8 8888    ‘ 8888
   ,88’
 8 8888         8 888888888888 ,8’         ‘         ‘8.‘8888. 8 8888       ‘888
8888P’


! * 16 terms are replaced in the linking process ....
```



```
The linked formulas ....
0 : (    1.00000000) D3(i,m,k,k,o1,i) h(m,o1)
1 : (    1.00000000) D2(i,i,k,k) h(m,m)
2 : (   -1.00000000) D3(i,m,k,k,m,o1) h(i,o1)
3 : (   -1.00000000) D2(i,o1,k,k) h(i,o1)
4 : (   -1.00000000) D3(i,m,k,o1,m,i) h(k,o1)
5 : (   -1.00000000) D2(i,i,k,o1) h(k,o1)
6 : (    1.00000000) D3(i,m,k,k,m,i) h(a,a)
7 : (    1.00000000) D2(i,i,k,k) h(a,a)
8 : (    2.00000000) D3(i,m,k,k,o1,i) Y0(m,o1)
9 : (    2.00000000) D2(i,i,k,k) Y1(m,m)
10 : (   -2.00000000) D3(i,m,k,k,m,o1) Y2(i,o1)
11 : (   -2.00000000) D2(i,o1,k,k) Y3(i,o1)
12 : (   -2.00000000) D3(i,m,k,o1,m,i) Y4(k,o1)
13 : (   -2.00000000) D2(i,i,k,o1) Y5(k,o1)
14 : (   -1.00000000) D3(i,m,k,k,o1,i) Y6(m,o1)
15 : (   -1.00000000) D2(i,i,k,k) Y7(m,m)
16 : (    1.00000000) D3(i,m,k,k,m,o1) Y8(i,o1)
17 : (    1.00000000) D2(i,o1,k,k) Y9(i,o1)
18 : (    1.00000000) D3(i,m,k,o1,m,i) Y10(k,o1)
19 : (    1.00000000) D2(i,i,k,o1) Y11(k,o1)
20 : (    2.00000000) D3(i,m,k,k,m,i) Y12(a,a)
21 : (    2.00000000) D2(i,i,k,k) Y13(a,a)
22 : (   -1.00000000) D3(i,m,k,k,m,i) Y14(a,a)
23 : (   -1.00000000) D2(i,i,k,k) Y15(a,a)
24 : (    1.00000000) D4(i,m,k,k,o1,o3,o2,i) V2(m,o2,o1,o3)
25 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(m,m,o1,o2)
26 : (    1.00000000) D3(i,o1,k,k,o2,i) V2(m,o1,m,o2)
27 : (   -1.00000000) D4(i,m,k,k,m,o2,o3,o1) V2(i,o2,o1,o3)
28 : (   -1.00000000) D3(i,o2,k,k,o3,o1) V2(i,o2,o1,o3)
29 : (   -1.00000000) D3(i,o2,k,k,m,o1) V2(i,o1,m,o2)
30 : (   -1.00000000) D4(i,m,k,o2,m,i,o3,o1) V2(k,o2,o1,o3)
31 : (   -1.00000000) D3(i,i,k,o2,o3,o1) V2(k,o2,o1,o3)
32 : (   -1.00000000) D3(i,m,o1,k,o2,i) V2(k,o1,m,o2)
33 : (   -1.00000000) D3(i,m,k,o2,m,o1) V2(i,o1,k,o2)
34 : (   -1.00000000) D2(i,o2,k,o1) V2(i,o2,k,o1)
35 : (    1.00000000) D4(i,m,k,k,m,i,o1,o2) V2(o1,o2,a,a)
36 : (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,a,a)
37 : (    2.00000000) D3(i,m,k,k,o1,i) V2(m,o1,a,a)
38 : (    1.00000000) D2(i,i,k,k) V2(m,m,a,a)
39 : (    1.00000000) D4(i,m,k,o1,m,i,o2,k) V2(o1,a,o2,a)
40 : (    1.00000000) D3(i,i,k,o1,o2,k) V2(o1,a,o2,a)
41 : (    2.00000000) D3(i,k,k,o1,m,i) V2(m,a,o1,a)
42 : (    1.00000000) D2(i,k,k,i) V2(m,a,m,a)
43 : (    1.00000000) Ecas D3(i,m,k,k,m,i)
44 : (    1.00000000) Ecas D2(i,i,k,k)

The content of each effective tensor ....
Y0 <-- (    1.00000000)  V2(c1,c1,m,o1)
Y1 <-- (    1.00000000)  V2(c1,c1,m,m)
Y2 <-- (    1.00000000)  V2(c1,c1,i,o1)
Y3 <-- (    1.00000000)  V2(c1,c1,i,o1)
Y4 <-- (    1.00000000)  V2(c1,c1,k,o1)
Y5 <-- (    1.00000000)  V2(c1,c1,k,o1)
Y6 <-- (    1.00000000)  V2(c1,m,c1,o1)
Y7 <-- (    1.00000000)  V2(c1,m,c1,m)
Y8 <-- (    1.00000000)  V2(c1,i,c1,o1)
Y9 <-- (    1.00000000)  V2(c1,i,c1,o1)
Y10 <-- (    1.00000000)  V2(c1,k,c1,o1)
Y11 <-- (    1.00000000)  V2(c1,k,c1,o1)
Y12 <-- (    1.00000000)  V2(c1,c1,a,a)
Y13 <-- (    1.00000000)  V2(c1,c1,a,a)
Y14 <-- (    1.00000000)  V2(c1,a,c1,a)
Y15 <-- (    1.00000000)  V2(c1,a,c1,a)


! No.0
! Hdiag(i,k,m,a)  <--
```

```
! (    1.00000000) D3(i,m,k,k,o1,i) h(m,o1)
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D3(i,m,k,k,o1,i) * h(m,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.1
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D2(i,i,k,k) h(m,m)
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum() D2(i,i,k,k) * h(m,m)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.2
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,k,k,m,o1) h(i,o1)
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D3(i,m,k,k,m,o1) * h(i,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.3
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D2(i,o1,k,k) h(i,o1)
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D2(i,o1,k,k) * h(i,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.4
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,k,o1,m,i) h(k,o1)
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D3(i,m,k,o1,m,i) * h(k,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.5
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D2(i,i,k,o1) h(k,o1)
! * Begin scaling analysis .... *

for a in {vir}:
```



```
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D2(i,i,k,o1) * h(k,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.6
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,k,m,i) h(a,a)
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum() D3(i,m,k,k,m,i) * h(a,a)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.7
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D2(i,i,k,k) h(a,a)
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum() D2(i,i,k,k) * h(a,a)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.8
! Hdiag(i,k,m,a)  <--
! (    2.00000000) D3(i,m,k,k,o1,i) Y0(m,o1)
! * Begin scaling analysis .... *

Declare Y0 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += 2  sum(o1) D3(i,m,k,k,o1,i) * Y0(m,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.9
! Hdiag(i,k,m,a)  <--
! (    2.00000000) D2(i,i,k,k) Y1(m,m)
! * Begin scaling analysis .... *

Declare Y1 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += 2  sum() D2(i,i,k,k) * Y1(m,m)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.10
! Hdiag(i,k,m,a)  <--
```

```
! (   −2.00000000) D3(i,m,k,k,m,o1) Y2(i,o1)
! * Begin scaling analysis .... *

Declare Y2 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += −2  sum(o1) D3(i,m,k,k,m,o1) * Y2(i,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.11
! Hdiag(i,k,m,a)  <--
! (   −2.00000000) D2(i,o1,k,k) Y3(i,o1)
! * Begin scaling analysis .... *

Declare Y3 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += −2  sum(o1) D2(i,o1,k,k) * Y3(i,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.12
! Hdiag(i,k,m,a)  <--
! (   −2.00000000) D3(i,m,k,o1,m,i) Y4(k,o1)
! * Begin scaling analysis .... *

Declare Y4 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += −2  sum(o1) D3(i,m,k,o1,m,i) * Y4(k,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.13
! Hdiag(i,k,m,a)  <--
! (   −2.00000000) D2(i,i,k,o1) Y5(k,o1)
! * Begin scaling analysis .... *

Declare Y5 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += −2  sum(o1) D2(i,i,k,o1) * Y5(k,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.14
! Hdiag(i,k,m,a)  <--
! (   −1.00000000) D3(i,m,k,k,o1,i) Y6(m,o1)
```



```
! * Begin scaling analysis .... *

Declare Y6 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D3(i,m,k,k,o1,i) * Y6(m,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.15
! Hdiag(i,k,m,a)  <--
! (   −1.00000000) D2(i,i,k,k) Y7(m,m)
! * Begin scaling analysis .... *

Declare Y7 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum() D2(i,i,k,k) * Y7(m,m)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.16
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,k,m,o1) Y8(i,o1)
! * Begin scaling analysis .... *

Declare Y8 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D3(i,m,k,k,m,o1) * Y8(i,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.17
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D2(i,o1,k,k) Y9(i,o1)
! * Begin scaling analysis .... *

Declare Y9 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D2(i,o1,k,k) * Y9(i,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.18
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o1,m,i) Y10(k,o1)
! * Begin scaling analysis .... *
```

```
Declare Y10 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D3(i,m,k,o1,m,i) * Y10(k,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.19
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D2(i,i,k,o1) Y11(k,o1)
! * Begin scaling analysis .... *

Declare Y11 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1) D2(i,i,k,o1) * Y11(k,o1)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.20
! Hdiag(i,k,m,a)  <--
! (    2.00000000) D3(i,m,k,k,m,i) Y12(a,a)
! * Begin scaling analysis .... *

Declare Y12 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += 2  sum() D3(i,m,k,k,m,i) * Y12(a,a)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.21
! Hdiag(i,k,m,a)  <--
! (    2.00000000) D2(i,i,k,k) Y13(a,a)
! * Begin scaling analysis .... *

Declare Y13 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += 2  sum() D2(i,i,k,k) * Y13(a,a)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.22
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,k,k,m,i) Y14(a,a)
! * Begin scaling analysis .... *
```



```
Declare Y14 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum() D3(i,m,k,k,m,i) * Y14(a,a)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.23
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D2(i,i,k,k) Y15(a,a)
! * Begin scaling analysis .... *

Declare Y15 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) +=  sum() D2(i,i,k,k) * Y15(a,a)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.24
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D4(i,m,k,k,o1,o3,o2,i) V2(m,o2,o1,o3)
! Indices of ERI and D4 are rotated to match with each other.
! * Begin scaling analysis .... *

for m in {occ}:
  Read V2 from GA for m
  for a in {vir}:
    Read Hdiag from GA for a
    for i in {occ}:
      Read D4 from GA for m, i
      Hdiag_(a)(i, k, m) +=  sum(o2,o1,o3) V2(,o2,o1,o3) * D4(,,k,k,o3,o1,i,o2)
    Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.25
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D3(i,i,k,k,o1,o2) V2(m,m,o1,o2)
! * Begin scaling analysis .... *

for m in {occ}:
  Read V2 from GA for m
  for a in {vir}:
    Read Hdiag from GA for a
    Hdiag_(a)(i, k, m) +=  sum(o1,o2) V2(,m,o1,o2) * D3(i,i,k,k,o1,o2)
    Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.26
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D3(i,o1,k,k,o2,i) V2(m,o1,m,o2)
! * Begin scaling analysis .... *

for m in {occ}:
  Read V2 from GA for m
```

```
  for a in {vir}:
    Read Hdiag from GA for a
    Hdiag_(a)(i, k, m) +=  sum(o1,o2) V2(,o1,m,o2) * D3(i,o1,k,k,o2,i)
    Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.27
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D4(i,m,k,k,m,o2,o3,o1) V2(i,o2,o1,o3)
! Indices of ERI and D4 are rotated to match with each other.
! * Begin scaling analysis .... *

for i in {occ}:
  Read V2 from GA for i
  for m in {occ}:
    for a in {vir}:
      Read Hdiag from GA for a
      Read D4 from GA for i, m
      Hdiag_(a)(i, k, m) +=  sum(o2,o1,o3) V2(,o2,o1,o3) * D4(,,k,k,m,o2,o3,o1)
      Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.28
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D3(i,o2,k,k,o3,o1) V2(i,o2,o1,o3)
! * Begin scaling analysis .... *

for i in {occ}:
  Read V2 from GA for i
  for a in {vir}:
    Read Hdiag from GA for a
    Hdiag_(a)(i, k, m) +=  sum(o2,o1,o3) V2(,o2,o1,o3) * D3(i,o2,k,k,o3,o1)
    Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.29
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D3(i,o2,k,k,m,o1) V2(i,o1,m,o2)
! * Begin scaling analysis .... *

for i in {occ}:
  Read V2 from GA for i
  for a in {vir}:
    Read Hdiag from GA for a
    Hdiag_(a)(i, k, m) +=  sum(o1,o2) V2(,o1,m,o2) * D3(i,o2,k,k,m,o1)
    Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.30
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D4(i,m,k,o2,m,i,o3,o1) V2(k,o2,o1,o3)
! Indices of ERI and D4 are rotated to match with each other.
! * Begin scaling analysis .... *

for k in {occ}:
  Read V2 from GA for k
  for o2 in {occ}:
    for a in {vir}:
      Read Hdiag from GA for a
      Read D4 from GA for k, o2
      Hdiag_(a)(i, k, m) +=  sum(o1,o3) V2(,o2,o1,o3) * D4(,,i,m,m,i,o3,o1)
```



```
      Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.31
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D3(i,i,k,o2,o3,o1) V2(k,o2,o1,o3)
! * Begin scaling analysis .... *

for k in {occ}:
  Read V2 from GA for k
  for a in {vir}:
    Read Hdiag from GA for a
    Hdiag_(a)(i, k, m) +=  sum(o2,o1,o3) V2(,o2,o1,o3) * D3(i,i,k,o2,o3,o1)
    Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.32
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,o1,k,o2,i) V2(k,o1,m,o2)
! * Begin scaling analysis .... *

for k in {occ}:
  Read V2 from GA for k
  for a in {vir}:
    Read Hdiag from GA for a
    Hdiag_(a)(i, k, m) +=  sum(o1,o2) V2(,o1,m,o2) * D3(i,m,o1,k,o2,i)
    Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.33
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,k,o2,m,o1) V2(i,o1,k,o2)
! * Begin scaling analysis .... *

for i in {occ}:
  Read V2 from GA for i
  for a in {vir}:
    Read Hdiag from GA for a
    Hdiag_(a)(i, k, m) +=  sum(o1,o2) V2(,o1,k,o2) * D3(i,m,k,o2,m,o1)
    Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.34
! Hdiag(i,k,m,a)  <--
! (   -1.00000000) D2(i,o2,k,o1) V2(i,o2,k,o1)
! * Begin scaling analysis .... *

for i in {occ}:
  Read V2 from GA for i
  for a in {vir}:
    Read Hdiag from GA for a
    Hdiag_(a)(i, k, m) +=  sum(o2,o1) V2(,o2,k,o1) * D2(i,o2,k,o1)
    Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.35
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D4(i,m,k,k,m,i,o1,o2) V2(o1,o2,a,a)
! Indices of ERI are rotated to match with LHS.
```

```
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  for i in {occ}:
    for m in {occ}:
      Read D4 from GA for i, m
      Hdiag_(a)(i, k, m) +=  sum(o1,o2) V2(,a,o1,o2) * D4(,,k,k,m,i,o1,o2)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.36
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D3(i,i,k,k,o1,o2) V2(o1,o2,a,a)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1,o2) V2(,a,o1,o2) * D3(i,i,k,k,o1,o2)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.37
! Hdiag(i,k,m,a)  <--
! (    2.00000000) D3(i,m,k,k,o1,i) V2(m,o1,a,a)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  Hdiag_(a)(i, k, m) += 2  sum(o1) V2(,a,m,o1) * D3(i,m,k,k,o1,i)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.38
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D2(i,i,k,k) V2(m,m,a,a)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  Hdiag_(a)(i, k, m) +=  sum() V2(,a,m,m) * D2(i,i,k,k)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.39
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D4(i,m,k,o1,m,i,o2,k) V2(o1,a,o2,a)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  for i in {occ}:
```



```
    for m in {occ}:
      Read D4 from GA for i, m
      Hdiag_(a)(i, k, m) +=  sum(o1,o2) V2(,o1,o2,a) * D4(,,k,o1,m,i,o2,k)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.40
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D3(i,i,k,o1,o2,k) V2(o1,a,o2,a)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  Hdiag_(a)(i, k, m) +=  sum(o1,o2) V2(,o1,o2,a) * D3(i,i,k,o1,o2,k)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.41
! Hdiag(i,k,m,a)  <--
! (    2.00000000) D3(i,k,k,o1,m,i) V2(m,a,o1,a)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  Hdiag_(a)(i, k, m) += 2  sum(o1) V2(,m,o1,a) * D3(i,k,k,o1,m,i)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.42
! Hdiag(i,k,m,a)  <--
! (    1.00000000) D2(i,k,k,i) V2(m,a,m,a)
! Indices of ERI are rotated to match with LHS.
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Read V2 from GA for a
  Hdiag_(a)(i, k, m) +=  sum() V2(,m,m,a) * D2(i,k,k,i)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.43
! Hdiag(i,k,m,a)  <--
! (    1.00000000) Ecas D3(i,m,k,k,m,i)
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += Ecas sum() D3(i,m,k,k,m,i)
  Accumulate Hdiag_(a)(i,k,m) for a

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.44
! Hdiag(i,k,m,a)  <--
! (    1.00000000) Ecas D2(i,i,k,k)
```

```
! * Begin scaling analysis .... *

for a in {vir}:
  Read Hdiag from GA for a
  Hdiag_(a)(i, k, m) += Ecas sum() D2(i,i,k,k)
  Accumulate Hdiag_(a)(i,k,m) for a

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

< Calculation of the Sigma_{0} += <Psi0| H T2 ER |Psi0> >

* 1 <g/oovv>

(    0.50000000) T2(o1,o2,v1,v2) V2(o3,o4,v1,v2) E2(o3,o4,o1,o2)
(    0.50000000) T2(o1,o2,v1,v2) V2(o3,o4,v2,v1) E2(o3,o4,o2,o1)

Decompose RDMs .....


< RESULT >
    0 : (    1.00000000) D2(o1,o2,o3,o4) T2(o1,o2,v1,v2) V2(o3,o4,v1,v2)


< RESULT2 >
    0 : (    1.00000000) D2(o1,o3,o2,o4) T2(o1,o2,v1,v2) V2(o3,v1,o4,v2)

< RESULT >
    0 : (    1.00000000) D2(o1,o3,o2,o4) T2(o1,o2,v1,v2) V2(o3,v1,o4,v2)
Setting up parameters as default ....

 8 8888888888   8 8888888888            ,8.       ,8.    8888888 8888888888 ,o88
8888o.
 8 8888         8 8888                 ,888.     ,888.         8 8888    . 8888
    ‘88.
 8 8888         8 8888                .‘8888.   .‘8888.        8 8888   ,8 8888
      ‘8b
 8 8888         8 8888               ,8.‘8888. ,8.‘8888.       8 8888   88 8888
       ‘8b
 8 888888888888 8 888888888888      ,8’8.‘8888,8^8.‘8888.      8 8888   88 8888
        88
 8 8888         8 8888             ,8’ ‘8.‘8888’ ‘8.‘8888.     8 8888   88 8888
        88
 8 8888         8 8888            ,8’   ‘8.‘88’   ‘8.‘8888.    8 8888   88 8888
     ,8P
 8 8888         8 8888           ,8’     ‘8.‘’     ‘8.‘8888.   8 8888   ‘8 8888
      ,8P
 8 8888         8 8888          ,8’       ‘8        ‘8.‘8888.  8 8888    ‘ 8888
    ,88’
 8 8888         8 888888888888 ,8’         ‘         ‘8.‘8888. 8 8888       ‘888
8888P’


! * 0 terms are replaced in the linking process ....

! No.0
! S0()  <--
! (    1.00000000) D2(o1,o3,o2,o4) T2(o1,o2,v1,v2) V2(o3,v1,o4,v2)
! Indices of ERI are rotated to match with Bareamp.
! *** D2(o1,o3,o2,o4) T2(o1,o2,v1,v2)  is skipped due to the priority
Case 1 ..... X(o1,o2,v2,v1)  <----- (    1.00000000)  D2(o1,o3,o2,o4) V2(v2,o4,o
3,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 2 ..... X(o1,o2,o4,o3)  <----- (    1.00000000)  T2(o1,o2,v1,v2) V2(v2,o4,o
3,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^4)
```



```
! The optimal choice is .....
1: X(o1,o2,v2,v1)  <--  (    1.00000000)  D2(o1,o3,o2,o4) V2(v2,o4,o3,v1)
2: S0()  <--  (    1.00000000) T2(o1,o2,v1,v2) X(o1,o2,v2,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for v2 in {vir}:
  Read V2 from GA for v2
  Read T2 from GA for v2
  Declare X as a o^2v^1 tensor
  X_(v2)(o1,o2,v1) += 1.0 sum(o4,o3) V2(,o4,o3,v1) * D2(o1,o3,o2,o4)

  S0_() += 1.0 sum(o1,o2,v1) T2(o1,o2,v1,) * X_(v2)(o1,o2,,v1)

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

* 2 <g/ooov>

(    0.50000000) T2(o1,o2,o3,v1) V2(c1,o4,c2,v1) E3(c1,o3,o4,c2,o1,o2)
(    0.50000000) T2(o1,o2,o3,v1) V2(c1,c2,v1,o4) E3(c1,o3,o4,o2,o1,c2)
(    0.50000000) T2(o1,o2,o3,v1) V2(c1,c2,v1,o4) E3(c1,o3,o4,o2,o1,c2)
(    0.50000000) T2(o1,o2,o3,v1) V2(c1,o4,c2,v1) E3(c1,o3,o4,c2,o1,o2)
(    0.50000000) T2(o1,o2,o3,v1) V2(o4,o5,o6,v1) E3(o3,o4,o5,o1,o6,o2)
(    0.50000000) T2(o1,o2,o3,v1) V2(o3,o5,o4,v1) E2(o4,o5,o1,o2)
(    0.50000000) T2(o1,o2,o3,v1) V2(o4,o5,v1,o6) E3(o3,o4,o5,o1,o2,o6)
(    0.50000000) T2(o1,o2,o3,v1) V2(o3,o4,o5,v1) E2(o4,o5,o2,o1)

Decompose RDMs .....


< RESULT >
    0 : (    1.00000000) D2(o1,o2,o3,o4) T2(o2,o1,o4,v1) h(o3,v1)
    1 : (    2.00000000) D2(o4,o3,o2,o1) T2(o3,o4,o1,v1) V2(c1,o2,c1,v1)
    2 : (   -1.00000000) D2(o4,o3,o2,o1) T2(o4,o3,o2,v1) V2(c1,c1,o1,v1)
    3 : (    1.00000000) D3(o1,o2,o3,o4,o5,o6) T2(o1,o2,o4,v1) V2(o3,o5,o6,v1)
    4 : (    1.00000000) D2(o1,o2,o3,o4) T2(o1,o2,o5,v1) V2(o3,o4,o5,v1)


< RESULT2 >
    0 : (    1.00000000) D2(o1,o3,o2,o4) T2(o2,o1,o4,v1) h(o3,v1)
    1 : (    2.00000000) D2(o1,o3,o2,o4) T2(o3,o4,o1,v1) V2(c1,c1,o2,v1)
    2 : (   -1.00000000) D2(o1,o3,o2,o4) T2(o4,o3,o2,v1) V2(c1,o1,c1,v1)
    3 : (    1.00000000) D3(o1,o4,o2,o5,o3,o6) T2(o1,o2,o4,v1) V2(o3,o6,o5,v1)
    4 : (    1.00000000) D2(o1,o3,o2,o4) T2(o1,o2,o5,v1) V2(o3,o5,o4,v1)

< RESULT >
    0 : (    1.00000000) D2(o1,o3,o2,o4) T2(o2,o1,o4,v1) h(o3,v1)
    1 : (    2.00000000) D2(o1,o3,o2,o4) T2(o3,o4,o1,v1) V2(c1,c1,o2,v1)
    2 : (   -1.00000000) D2(o1,o3,o2,o4) T2(o4,o3,o2,v1) V2(c1,o1,c1,v1)
    3 : (    1.00000000) D3(o1,o4,o2,o5,o3,o6) T2(o1,o2,o4,v1) V2(o3,o6,o5,v1)
    4 : (    1.00000000) D2(o1,o3,o2,o4) T2(o1,o2,o5,v1) V2(o3,o5,o4,v1)
Setting up parameters as default ....

 8 8888888888   8 8888888888            ,8.       ,8.    8888888 8888888888 ,o88
8888o.
 8 8888         8 8888                 ,888.     ,888.         8 8888    . 8888
    ‘88.
 8 8888         8 8888                .‘8888.   .‘8888.        8 8888   ,8 8888
      ‘8b
 8 8888         8 8888               ,8.‘8888. ,8.‘8888.       8 8888   88 8888
       ‘8b
 8 888888888888 8 888888888888      ,8’8.‘8888,8^8.‘8888.      8 8888   88 8888
        88
 8 8888         8 8888             ,8’ ‘8.‘8888’ ‘8.‘8888.     8 8888   88 8888
        88
```

```
 8 8888         8 8888            ,8’   ‘8.‘88’   ‘8.‘8888.    8 8888   88 8888
      ,8P
 8 8888         8 8888           ,8’     ‘8.‘’     ‘8.‘8888.   8 8888   ‘8 8888
     ,8P
 8 8888         8 8888          ,8’       ‘8        ‘8.‘8888.  8 8888    ‘ 8888
   ,88’
 8 8888         8 888888888888 ,8’         ‘         ‘8.‘8888. 8 8888       ‘888
8888P’


! * 2 terms are replaced in the linking process ....


The linked formulas ....
0 : (    1.00000000) D2(o1,o3,o2,o4) T2(o2,o1,o4,v1) h(o3,v1)
1 : (    2.00000000) D2(o1,o3,o2,o4) T2(o3,o4,o1,v1) Y0(o2,v1)
2 : (   -1.00000000) D2(o1,o3,o2,o4) T2(o4,o3,o2,v1) Y1(o1,v1)
3 : (    1.00000000) D3(o1,o4,o2,o5,o3,o6) T2(o1,o2,o4,v1) V2(o3,o6,o5,v1)
4 : (    1.00000000) D2(o1,o3,o2,o4) T2(o1,o2,o5,v1) V2(o3,o5,o4,v1)

The content of each effective tensor ....
Y0 <-- (    1.00000000)  V2(c1,c1,o2,v1)
Y1 <-- (    1.00000000)  V2(c1,o1,c1,v1)


! No.0
! S0()  <--
! (    1.00000000) D2(o1,o3,o2,o4) T2(o2,o1,o4,v1) h(o3,v1)
Case 0 ..... X(o3,v1)  <----- (    1.00000000)  D2(o1,o3,o2,o4) T2(o2,o1,o4,v1)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^1)
Case 1 ..... X(o1,o2,o4,v1)  <----- (    1.00000000)  D2(o1,o3,o2,o4) h(o3,v1)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o2,o1,o4,o3)  <----- (    1.00000000)  T2(o2,o1,o4,v1) h(o3,v1)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^4)

! The optimal choice is .....
1: X(o3,v1)  <--  (    1.00000000)  D2(o1,o3,o2,o4) T2(o2,o1,o4,v1)
2: S0()  <--  (    1.00000000) X(o3,v1) h(o3,v1)

! Scaling       : O(o^4v^1)
! Max size of X : o^1

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^1 tensor
  X_(v1)(o3) += 1.0 sum(o1,o2,o4) D2(o1,o3,o2,o4) * T2(o2,o1,o4,)

  S0_() += 1.0 sum(o3) X_(v1)(o3,) * h(o3,v1)

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.1
! S0()  <--
! (    2.00000000) D2(o1,o3,o2,o4) T2(o3,o4,o1,v1) Y0(o2,v1)
Case 0 ..... X(o2,v1)  <----- (    1.00000000)  D2(o1,o3,o2,o4) T2(o3,o4,o1,v1)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^1)
Case 1 ..... X(o1,o3,o4,v1)  <----- (    1.00000000)  D2(o1,o3,o2,o4) Y0(o2,v1)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o3,o4,o1,o2)  <----- (    1.00000000)  T2(o3,o4,o1,v1) Y0(o2,v1)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^4)
```



```
! The optimal choice is .....
1: X(o2,v1)  <--  (    1.00000000)  D2(o1,o3,o2,o4) T2(o3,o4,o1,v1)
2: S0()  <--  (    2.00000000) X(o2,v1) Y0(o2,v1)

! Scaling       : O(o^4v^1)
! Max size of X : o^1

! * Begin scaling analysis .... *

Declare Y0 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^1 tensor
  X_(v1)(o2) += 1.0 sum(o1,o3,o4) D2(o1,o3,o2,o4) * T2(o3,o4,o1,)

  S0_() += 2 sum(o2) X_(v1)(o2,) * Y0(o2,v1)

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.2
! S0()  <--
! (   -1.00000000) D2(o1,o3,o2,o4) T2(o4,o3,o2,v1) Y1(o1,v1)
Case 0 ..... X(o1,v1)  <----- (    1.00000000)  D2(o1,o3,o2,o4) T2(o4,o3,o2,v1)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^1)
Case 1 ..... X(o3,o2,o4,v1)  <----- (    1.00000000)  D2(o1,o3,o2,o4) Y1(o1,v1)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o4,o3,o2,o1)  <----- (    1.00000000)  T2(o4,o3,o2,v1) Y1(o1,v1)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^4)

! The optimal choice is .....
1: X(o1,v1)  <--  (    1.00000000)  D2(o1,o3,o2,o4) T2(o4,o3,o2,v1)
2: S0()  <--  (   -1.00000000) X(o1,v1) Y1(o1,v1)

! Scaling       : O(o^4v^1)
! Max size of X : o^1

! * Begin scaling analysis .... *

Declare Y1 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^1 tensor
  X_(v1)(o1) += 1.0 sum(o3,o2,o4) D2(o1,o3,o2,o4) * T2(o4,o3,o2,)

  S0_() += -1 sum(o1) X_(v1)(o1,) * Y1(o1,v1)

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.3
! S0()  <--
! (    1.00000000) D3(o1,o4,o2,o5,o3,o6) T2(o1,o2,o4,v1) V2(o3,o6,o5,v1)
! Indices of ERI are rotated to match with Bareamp.
! *** D3(o1,o4,o2,o5,o3,o6) T2(o1,o2,o4,v1)  is skipped due to the priority
Case 1 ..... X(o1,o4,o2,v1)  <----- (    1.00000000)  D3(o1,o4,o2,o5,o3,o6) V2(v
1,o5,o3,o6)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
```

```
Case 2 ..... X(o1,o2,o4,o5,o3,o6)  <----- (    1.00000000)  T2(o1,o2,o4,v1) V2(v
1,o5,o3,o6)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)

! The optimal choice is .....
1: X(o1,o4,o2,v1)  <--  (    1.00000000)  D3(o1,o4,o2,o5,o3,o6) V2(v1,o5,o3,o6)
2: S0()  <--  (    1.00000000) T2(o1,o2,o4,v1) X(o1,o4,o2,v1)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read V2 from GA for v1
  Read T2 from GA for v1
  Declare X as a o^3 tensor
  X_(v1)(o1,o4,o2) += 1.0 sum(o5,o3,o6) V2(,o5,o3,o6) * D3(o1,o4,o2,o5,o3,o6)

  S0_() += 1.0 sum(o1,o2,o4) T2(o1,o2,o4,) * X_(v1)(o1,o4,o2,)

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.4
! S0()  <--
! (    1.00000000) D2(o1,o3,o2,o4) T2(o1,o2,o5,v1) V2(o3,o5,o4,v1)
! Indices of ERI are rotated to match with Bareamp.
! *** D2(o1,o3,o2,o4) T2(o1,o2,o5,v1)  is skipped due to the priority
Case 1 ..... X(o1,o2,o5,v1)  <----- (    1.00000000)  D2(o1,o3,o2,o4) V2(v1,o4,o
3,o5)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o1,o2,o4,o3)  <----- (    1.00000000)  T2(o1,o2,o5,v1) V2(v1,o4,o
3,o5)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)

! The optimal choice is .....
1: X(o1,o2,o5,v1)  <--  (    1.00000000)  D2(o1,o3,o2,o4) V2(v1,o4,o3,o5)
2: S0()  <--  (    1.00000000) T2(o1,o2,o5,v1) X(o1,o2,o5,v1)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read V2 from GA for v1
  Read T2 from GA for v1
  Declare X as a o^3 tensor
  X_(v1)(o1,o2,o5) += 1.0 sum(o4,o3) V2(,o4,o3,o5) * D2(o1,o3,o2,o4)

  S0_() += 1.0 sum(o1,o2,o5) T2(o1,o2,o5,) * X_(v1)(o1,o2,o5,)

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

< Calculation of the Sigma_{aa'}^{ee'} += <Psi0|EL H T0 |Psi0> >

* 1 <oovv/g>

(    0.50000000) T0 V2(o1,o2,a,c) E2(i,k,o1,o2)
(    0.50000000) T0 V2(o1,o2,c,a) E2(i,k,o2,o1)

Decompose RDMs .....
```



```
< RESULT >
    0 : (    1.00000000) T0 D2(i,k,o1,o2) V2(o1,o2,a,c)


< RESULT2 >
    0 : (    1.00000000) T0 D2(i,o1,k,o2) V2(o1,a,o2,c)

< RESULT >
    0 : (    1.00000000) T0 D2(i,o1,k,o2) V2(o1,a,o2,c)
Setting up parameters as default ....

 8 8888888888   8 8888888888            ,8.       ,8.    8888888 8888888888 ,o88
8888o.
 8 8888         8 8888                 ,888.     ,888.         8 8888    . 8888
    '88.
 8 8888         8 8888                .'8888.   .'8888.        8 8888   ,8 8888
      '8b
 8 8888         8 8888               ,8.'8888. ,8.'8888.       8 8888   88 8888
      ,8b
 8 888888888888 8 888888888888      ,8'8.'8888,8^8.'8888.      8 8888   88 8888
       88
 8 8888         8 8888             ,8' '8.'8888' '8.'8888.     8 8888   88 8888
       88
 8 8888         8 8888            ,8'   '8.'88'   '8.'8888.    8 8888   88 8888
      ,8P
 8 8888         8 8888           ,8'     '8.''     '8.'8888.   8 8888   '8 8888
     ,8P
 8 8888         8 8888          ,8'       '8        '8.'8888.  8 8888    ' 8888
    ,88'
 8 8888         8 888888888888 ,8'         '         '8.'8888. 8 8888       '888
8888P'


! * 0 terms are replaced in the linking process ....

! No.0
! S2(i,k,a,c)  <--
! (    1.00000000) T0 D2(i,o1,k,o2) V2(o1,a,o2,c)
! Indices of ERI are rotated to match with LHS.
Case 0 ..... S2(i,k,c,a)  <----- (    1.00000000)  D2(i,o1,k,o2) V2(c,o2,o1,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: S2(i,k,c,a)  <--  (    1.00000000) T0 D2(i,o1,k,o2) V2(c,o2,o1,a)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare S2 as a o^2v^1 tensor
  S2_(c)(i, k, a) += T0 sum(o2,o1) V2(,o2,o1,a) * D2(i,o1,k,o2)
  Accumulate S2_(c)(i,k,a) for c

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

* 2 <ooov/g>

(    0.50000000) T0 V2(c1,o1,c2,a) E3(c1,i,k,c2,m,o1)
(    0.50000000) T0 V2(c1,c2,o1,a) E3(c1,i,k,o1,m,c2)
(    0.50000000) T0 V2(o1,o3,o2,a) E3(i,k,o1,m,o3,o2)
(    0.50000000) T0 V2(m,o2,o1,a) E2(i,k,o1,o2)
(    0.50000000) T0 V2(c1,c2,o1,a) E3(c1,i,k,o1,m,c2)
(    0.50000000) T0 V2(c1,o1,c2,a) E3(c1,i,k,c2,m,o1)
```

```
(    0.50000000) T0 V2(o1,o2,o3,a) E3(i,k,o1,m,o2,o3)
(    0.50000000) T0 V2(m,o1,o2,a) E2(i,k,o2,o1)

Decompose RDMs .....


< RESULT >
    0 : (    1.00000000) T0 D2(i,k,m,o1) h(o1,a)
    1 : (    2.00000000) T0 D2(i,k,m,o1) V2(c1,o1,c1,a)
    2 : (   -1.00000000) T0 D2(i,k,m,o1) V2(c1,c1,o1,a)
    3 : (    1.00000000) T0 D3(i,k,o1,m,o2,o3) V2(o1,o2,o3,a)
    4 : (    1.00000000) T0 D2(i,k,o1,o2) V2(m,o2,o1,a)


< RESULT2 >
    0 : (    1.00000000) T0 D2(i,m,k,o1) h(o1,a)
    1 : (    2.00000000) T0 D2(i,m,k,o1) V2(c1,c1,o1,a)
    2 : (   -1.00000000) T0 D2(i,m,k,o1) V2(c1,o1,c1,a)
    3 : (    1.00000000) T0 D3(i,m,k,o2,o1,o3) V2(o1,o3,o2,a)
    4 : (    1.00000000) T0 D2(i,o1,k,o2) V2(m,o1,o2,a)

< RESULT >
    0 : (    1.00000000) T0 D2(i,m,k,o1) h(o1,a)
    1 : (    2.00000000) T0 D2(i,m,k,o1) V2(c1,c1,o1,a)
    2 : (   -1.00000000) T0 D2(i,m,k,o1) V2(c1,o1,c1,a)
    3 : (    1.00000000) T0 D3(i,m,k,o2,o1,o3) V2(o1,o3,o2,a)
    4 : (    1.00000000) T0 D2(i,o1,k,o2) V2(m,o1,o2,a)
Setting up parameters as default ....


  ______________                                   ______
 |         |                .'. .'. '''''|'''''.~      ~.
 |______   |______        .'   '   '.    |    |          |
 |         |            .'          '.   |    |          |
 |         |__________.'              '. |    '.______.'



! * 2 terms are replaced in the linking process ....


The linked formulas ....
0 : (    1.00000000) T0 D2(i,m,k,o1) h(o1,a)
1 : (    2.00000000) T0 D2(i,m,k,o1) Y0(o1,a)
2 : (   -1.00000000) T0 D2(i,m,k,o1) Y1(o1,a)
3 : (    1.00000000) T0 D3(i,m,k,o2,o1,o3) V2(o1,o3,o2,a)
4 : (    1.00000000) T0 D2(i,o1,k,o2) V2(m,o1,o2,a)

The content of each effective tensor ....
Y0 <-- (    1.00000000)  V2(c1,c1,o1,a)
Y1 <-- (    1.00000000)  V2(c1,o1,c1,a)


! No.0
! S2(i,k,m,a)  <--
! (    1.00000000) T0 D2(i,m,k,o1) h(o1,a)
Case 0 ..... S2(i,m,k,a)  <----- (    1.00000000)  D2(i,m,k,o1) h(o1,a)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: S2(i,m,k,a)  <--  (    1.00000000) T0 D2(i,m,k,o1) h(o1,a)

! Scaling       : O(o^4v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
```



```
  Read S2 from GA for a
  Declare S2 as a o^3 tensor
  S2_(a)(i, k, m) += T0 sum(o1) D2(i,m,k,o1) * h(o1,a)
  Accumulate S2_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.1
! S2(i,k,m,a)  <--
! (    2.00000000) T0 D2(i,m,k,o1) Y0(o1,a)
Case 0 ..... S2(i,m,k,a)  <----- (    1.00000000)  D2(i,m,k,o1) Y0(o1,a)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: S2(i,m,k,a)  <--  (    2.00000000) T0 D2(i,m,k,o1) Y0(o1,a)

! Scaling       : O(o^4v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y0 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read S2 from GA for a
  Declare S2 as a o^3 tensor
  S2_(a)(i, k, m) += 2 T0 sum(o1) D2(i,m,k,o1) * Y0(o1,a)
  Accumulate S2_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.2
! S2(i,k,m,a)  <--
! (   -1.00000000) T0 D2(i,m,k,o1) Y1(o1,a)
Case 0 ..... S2(i,m,k,a)  <----- (    1.00000000)  D2(i,m,k,o1) Y1(o1,a)
! Polynomial order is O(o^4v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: S2(i,m,k,a)  <--  (   -1.00000000) T0 D2(i,m,k,o1) Y1(o1,a)

! Scaling       : O(o^4v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y1 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read S2 from GA for a
  Declare S2 as a o^3 tensor
  S2_(a)(i, k, m) += T0 sum(o1) D2(i,m,k,o1) * Y1(o1,a)
  Accumulate S2_(a)(i,k,m) for a

! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.3
! S2(i,k,m,a)  <--
! (    1.00000000) T0 D3(i,m,k,o2,o1,o3) V2(o1,o3,o2,a)
! Indices of ERI are rotated to match with LHS.
Case 0 ..... S2(i,m,k,a)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3) V2(a,o2,o1
```

```
,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: S2(i,m,k,a)  <--  (    1.00000000) T0 D3(i,m,k,o2,o1,o3) V2(a,o2,o1,o3)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare S2 as a o^3 tensor
  S2_(a)(i, k, m) += T0 sum(o2,o1,o3) V2(,o2,o1,o3) * D3(i,m,k,o2,o1,o3)
  Accumulate S2_(a)(i,k,m) for a

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.4
! S2(i,k,m,a)  <--
! (    1.00000000) T0 D2(i,o1,k,o2) V2(m,o1,o2,a)
! Indices of ERI are rotated to match with LHS.
Case 0 ..... S2(i,k,m,a)  <----- (    1.00000000)  D2(i,o1,k,o2) V2(a,o2,m,o1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: S2(i,k,m,a)  <--  (    1.00000000) T0 D2(i,o1,k,o2) V2(a,o2,m,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare S2 as a o^3 tensor
  S2_(a)(i, k, m) += T0 sum(o2,o1) V2(,o2,m,o1) * D2(i,o1,k,o2)
  Accumulate S2_(a)(i,k,m) for a

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

< Construction of Sigma_{aa'}^{ee'} += <Psi0|EL H TR ER |Psi0> >

* 1 <oovv/oovv>

(    0.50000000) T2(o1,o2,a,c) V2(c1,c2,c3,c4) E4(c1,c2,i,k,c3,c4,o1,o2)
(    0.50000000) T2(o1,o2,c,a) V2(c1,c2,c3,c4) E4(c1,c2,i,k,c3,c4,o2,o1)
(    0.50000000) T2(o1,o2,a,c) V2(c1,o3,c2,o4) E4(c1,i,k,o3,c2,o1,o2,o4)
(    0.50000000) T2(o1,o2,c,a) V2(c1,o3,c2,o4) E4(c1,i,k,o3,c2,o2,o1,o4)
(    0.50000000) T2(o1,o2,a,c) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o1,o2,c2)
(    0.50000000) T2(o1,o2,c,a) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o2,o1,c2)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,c,c2,v1) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,v1,c) V2(c1,a,c2,v1) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,c,c2,v1) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,c,v1) V2(c1,a,c2,v1) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,c2,v1,c) E3(c1,i,k,o1,o2,c2)
(    0.50000000) T2(o1,o2,v1,c) V2(c1,c2,v1,a) E3(c1,i,k,o1,c2,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,c2,v1,c) E3(c1,i,k,o2,o1,c2)
(    0.50000000) T2(o1,o2,c,v1) V2(c1,c2,v1,a) E3(c1,i,k,o2,c2,o1)
(    0.50000000) T2(o1,o2,a,c) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o1,o2,c2)
(    0.50000000) T2(o1,o2,c,a) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o2,o1,c2)
(    0.50000000) T2(o1,o2,a,c) V2(c1,o3,c2,o4) E4(c1,i,k,o3,c2,o1,o2,o4)
```



```
(    0.50000000) T2(o1,o2,c,a) V2(c1,o3,c2,o4) E4(c1,i,k,o3,c2,o2,o1,o4)
(    0.50000000) T2(o1,o2,a,c) V2(o3,o4,o5,o6) E4(i,k,o3,o4,o1,o2,o5,o6)
(    0.50000000) T2(o1,o2,c,a) V2(o3,o4,o5,o6) E4(i,k,o3,o4,o2,o1,o5,o6)
(    0.50000000) T2(o1,o2,v1,a) V2(o3,c,o4,v1) E3(i,k,o3,o2,o1,o4)
(    0.50000000) T2(o1,o2,v1,c) V2(o3,a,o4,v1) E3(i,k,o3,o1,o2,o4)
(    0.50000000) T2(o1,o2,a,v1) V2(o3,c,o4,v1) E3(i,k,o3,o1,o2,o4)
(    0.50000000) T2(o1,o2,c,v1) V2(o3,a,o4,v1) E3(i,k,o3,o2,o1,o4)
(    0.50000000) T2(o1,o2,v1,a) V2(o3,o4,v1,c) E3(i,k,o3,o2,o4,o1)
(    0.50000000) T2(o1,o2,v1,c) V2(o3,o4,v1,a) E3(i,k,o3,o4,o2,o1)
(    0.50000000) T2(o1,o2,a,v1) V2(o3,o4,v1,c) E3(i,k,o3,o1,o4,o2)
(    0.50000000) T2(o1,o2,c,v1) V2(o3,o4,v1,a) E3(i,k,o3,o4,o1,o2)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,c2,v1,c) E3(c1,i,k,o1,o2,c2)
(    0.50000000) T2(o1,o2,v1,c) V2(c1,c2,v1,a) E3(c1,i,k,o1,c2,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,c2,v1,c) E3(c1,i,k,o2,o1,c2)
(    0.50000000) T2(o1,o2,c,v1) V2(c1,c2,v1,a) E3(c1,i,k,o2,c2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,c,c2,v1) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,v1,c) V2(c1,a,c2,v1) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,c,c2,v1) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,c,v1) V2(c1,a,c2,v1) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,c,c2,v1) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,v1,c) V2(c1,a,c2,v1) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,c,c2,v1) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,c,v1) V2(c1,a,c2,v1) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(o3,o4,v1,c) E3(i,k,o3,o2,o4,o1)
(    0.50000000) T2(o1,o2,v1,c) V2(o3,o4,v1,a) E3(i,k,o3,o4,o2,o1)
(    0.50000000) T2(o1,o2,a,v1) V2(o3,o4,v1,c) E3(i,k,o3,o1,o4,o2)
(    0.50000000) T2(o1,o2,c,v1) V2(o3,o4,v1,a) E3(i,k,o3,o4,o1,o2)
(    0.50000000) T2(o1,o2,v1,a) V2(o3,c,o4,v1) E3(i,k,o3,o2,o1,o4)
(    0.50000000) T2(o1,o2,v1,c) V2(o3,a,o4,v1) E3(i,k,o3,o1,o2,o4)
(    0.50000000) T2(o1,o2,a,v1) V2(o3,c,o4,v1) E3(i,k,o3,o1,o2,o4)
(    0.50000000) T2(o1,o2,c,v1) V2(o3,a,o4,v1) E3(i,k,o3,o2,o1,o4)
(    0.50000000) T2(o1,o2,v1,v2) V2(a,c,v1,v2) E2(i,k,o1,o2)
(    0.50000000) T2(o1,o2,v1,v2) V2(a,c,v2,v1) E2(i,k,o2,o1)
(    0.50000000) T2(o1,o2,v1,v2) V2(a,c,v2,v1) E2(i,k,o2,o1)
(    0.50000000) T2(o1,o2,v1,v2) V2(a,c,v1,v2) E2(i,k,o1,o2)

Decompose RDMs .....


< RESULT >
    0 : (    2.00000000) D2(i,k,o2,o1) T2(o2,o1,a,c) h(c1,c1)
    1 : (    2.00000000) D2(i,k,o2,o1) T2(o1,o2,c,a) h(c1,c1)
    2 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o3,o2,a,c) h(o4,o1)
    3 : (    1.00000000) D3(i,k,o1,o2,o3,o4) T2(o3,o2,c,a) h(o1,o4)
    4 : (    1.00000000) D2(i,k,o2,o1) T2(o1,o2,v1,a) h(c,v1)
    5 : (    1.00000000) D2(i,k,o2,o1) T2(o2,o1,v1,c) h(a,v1)
    6 : (    1.00000000) D2(i,k,o2,o1) T2(o2,o1,a,v1) h(c,v1)
    7 : (    1.00000000) D2(i,k,o1,o2) T2(o2,o1,c,v1) h(a,v1)
    8 : (    2.00000000) D2(i,k,o2,o1) T2(o2,o1,a,c) V2(c2,c1,c2,c1)
    9 : (   -1.00000000) D2(i,k,o2,o1) T2(o2,o1,a,c) V2(c2,c2,c1,c1)
   10 : (    2.00000000) D2(i,k,o2,o1) T2(o1,o2,c,a) V2(c2,c1,c2,c1)
   11 : (   -1.00000000) D2(i,k,o2,o1) T2(o1,o2,c,a) V2(c2,c2,c1,c1)
   12 : (    2.00000000) D3(i,k,o4,o3,o2,o1) T2(o3,o2,a,c) V2(c1,o4,c1,o1)
   13 : (    2.00000000) D3(i,k,o4,o3,o2,o1) T2(o2,o3,c,a) V2(c1,o4,c1,o1)
   14 : (   -1.00000000) D3(i,k,o4,o3,o2,o1) T2(o3,o2,a,c) V2(c1,c1,o4,o1)
   15 : (   -1.00000000) D3(i,k,o4,o3,o2,o1) T2(o2,o3,c,a) V2(c1,c1,o4,o1)
   16 : (    2.00000000) D2(i,k,o2,o1) T2(o1,o2,v1,a) V2(c1,c,c1,v1)
   17 : (    2.00000000) D2(i,k,o2,o1) T2(o2,o1,v1,c) V2(c1,a,c1,v1)
   18 : (    2.00000000) D2(i,k,o2,o1) T2(o2,o1,a,v1) V2(c1,c,c1,v1)
   19 : (    2.00000000) D2(i,k,o2,o1) T2(o1,o2,c,v1) V2(c1,a,c1,v1)
   20 : (   -1.00000000) D2(i,k,o2,o1) T2(o1,o2,v1,a) V2(c1,c1,c,v1)
   21 : (   -1.00000000) D2(i,k,o2,o1) T2(o2,o1,v1,c) V2(c1,c1,a,v1)
   22 : (   -1.00000000) D2(i,k,o2,o1) T2(o2,o1,a,v1) V2(c1,c1,c,v1)
   23 : (   -1.00000000) D2(i,k,o2,o1) T2(o1,o2,c,v1) V2(c1,c1,a,v1)
   24 : (    0.50000000) D4(i,k,o6,o5,o4,o3,o2,o1) T2(o4,o3,a,c) V2(o6,o5,o2,o1)

   25 : (    0.50000000) D4(i,k,o1,o2,o3,o4,o5,o6) T2(o4,o3,c,a) V2(o1,o2,o5,o6)

   26 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o2,o3,v1,a) V2(o4,c,o1,v1)
   27 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o3,o2,v1,c) V2(o4,a,o1,v1)
   28 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o3,o2,a,v1) V2(o4,c,o1,v1)
   29 : (    1.00000000) D3(i,k,o1,o2,o3,o4) T2(o3,o2,c,v1) V2(o1,a,o4,v1)
   30 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o1,o3,v1,a) V2(o4,o2,v1,c)
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   31 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o1,o2,v1,c) V2(o4,o3,v1,a)
   32 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o3,o1,a,v1) V2(o4,o2,v1,c)
   33 : (    1.00000000) D3(i,k,o1,o2,o3,o4) T2(o3,o4,c,v1) V2(o1,o2,v1,a)
   34 : (    1.00000000) D2(i,k,o1,o2) T2(o1,o2,v1,v2) V2(a,c,v1,v2)
   35 : (    1.00000000) D2(i,k,o1,o2) T2(o2,o1,v1,v2) V2(a,c,v2,v1)


< RESULT2 >
    0 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,a,c) h(c1,c1)
    1 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,c,a) h(c1,c1)
    2 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) h(o4,o1)
    3 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o2,c,a) h(o1,o4)
    4 : (    1.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) h(c,v1)
    5 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) h(a,v1)
    6 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) h(c,v1)
    7 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,c,v1) h(a,v1)
    8 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,a,c) V2(c1,c1,c2,c2)
    9 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,c) V2(c1,c2,c1,c2)
   10 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,c,a) V2(c1,c1,c2,c2)
   11 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,c,a) V2(c1,c2,c1,c2)
   12 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) V2(c1,c1,o1,o4)
   13 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,c,a) V2(c1,c1,o1,o4)
   14 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) V2(c1,o1,c1,o4)
   15 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,c,a) V2(c1,o1,c1,o4)
   16 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) V2(c1,c1,c,v1)
   17 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) V2(c1,c1,a,v1)
   18 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) V2(c1,c1,c,v1)
   19 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,c,v1) V2(c1,c1,a,v1)
   20 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) V2(c1,c,c1,v1)
   21 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) V2(c1,a,c1,v1)
   22 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) V2(c1,c,c1,v1)
   23 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,c,v1) V2(c1,a,c1,v1)
   24 : (    0.50000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o4,o3,a,c) V2(o1,o5,o2,o6)

   25 : (    0.50000000) D4(i,o3,k,o4,o1,o5,o2,o6) T2(o4,o3,c,a) V2(o1,o5,o2,o6)

   26 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,v1,a) V2(o1,o4,c,v1)
   27 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,c) V2(o1,o4,a,v1)
   28 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,v1) V2(o1,o4,c,v1)
   29 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o2,c,v1) V2(o1,o4,a,v1)
   30 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,v1,a) V2(o2,c,o4,v1)
   31 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,c) V2(o3,a,o4,v1)
   32 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o1,a,v1) V2(o2,c,o4,v1)
   33 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o4,c,v1) V2(o1,v1,o2,a)
   34 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,v1,v2) V2(a,v1,c,v2)
   35 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,v1,v2) V2(a,v2,c,v1)

< RESULT >
    0 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,a,c) h(c1,c1)
    1 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,c,a) h(c1,c1)
    2 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) h(o4,o1)
    3 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o2,c,a) h(o1,o4)
    4 : (    1.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) h(c,v1)
    5 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) h(a,v1)
    6 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) h(c,v1)
    7 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,c,v1) h(a,v1)
    8 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,a,c) V2(c1,c1,c2,c2)
    9 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,c) V2(c1,c2,c1,c2)
   10 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,c,a) V2(c1,c1,c2,c2)
   11 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,c,a) V2(c1,c2,c1,c2)
   12 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) V2(c1,c1,o1,o4)
   13 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,c,a) V2(c1,c1,o1,o4)
   14 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) V2(c1,o1,c1,o4)
   15 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,c,a) V2(c1,o1,c1,o4)
   16 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) V2(c1,c1,c,v1)
   17 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) V2(c1,c1,a,v1)
   18 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) V2(c1,c1,c,v1)
   19 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,c,v1) V2(c1,c1,a,v1)
   20 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) V2(c1,c,c1,v1)
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   21 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) V2(c1,a,c1,v1)
   22 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) V2(c1,c,c1,v1)
   23 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,c,v1) V2(c1,a,c1,v1)
   24 : (    0.50000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o4,o3,a,c) V2(o1,o5,o2,o6)

   25 : (    0.50000000) D4(i,o3,k,o4,o1,o5,o2,o6) T2(o4,o3,c,a) V2(o1,o5,o2,o6)

   26 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,v1,a) V2(o1,o4,c,v1)
   27 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,c) V2(o1,o4,a,v1)
   28 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,v1) V2(o1,o4,c,v1)
   29 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o2,c,v1) V2(o1,o4,a,v1)
   30 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,v1,a) V2(o2,c,o4,v1)
   31 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,c) V2(o3,a,o4,v1)
   32 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o1,a,v1) V2(o2,c,o4,v1)
   33 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o4,c,v1) V2(o1,v1,o2,a)
   34 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,v1,v2) V2(a,v1,c,v2)
   35 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,v1,v2) V2(a,v2,c,v1)
Setting up parameters as default ....

     _/_/_/_/                                  _/
    _/        _/_/    _/_/_/  _/_/    _/_/_/_/    _/_/
   _/_/_/  _/_/_/_/  _/    _/    _/  _/    _/  _/    _/
  _/      _/        _/    _/    _/  _/    _/  _/    _/
 _/        _/_/_/  _/    _/    _/    _/_/_/    _/_/


! * 18 terms are replaced in the linking process ....


The linked formulas ....
0 : (    2.00000000) Y0 D2(i,o2,k,o1) T2(o2,o1,a,c)
1 : (    2.00000000) Y1 D2(i,o2,k,o1) T2(o1,o2,c,a)
2 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) h(o4,o1)
3 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o2,c,a) h(o1,o4)
4 : (    1.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) h(c,v1)
5 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) h(a,v1)
6 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) h(c,v1)
7 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,c,v1) h(a,v1)
8 : (    2.00000000) Y2 D2(i,o2,k,o1) T2(o2,o1,a,c)
9 : (   -1.00000000) Y3 D2(i,o2,k,o1) T2(o2,o1,a,c)
10 : (    2.00000000) Y4 D2(i,o2,k,o1) T2(o1,o2,c,a)
11 : (   -1.00000000) Y5 D2(i,o2,k,o1) T2(o1,o2,c,a)
12 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) Y6(o1,o4)
13 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,c,a) Y7(o1,o4)
14 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) Y8(o1,o4)
15 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,c,a) Y9(o1,o4)
16 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) Y10(c,v1)
17 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) Y11(a,v1)
18 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) Y12(c,v1)
19 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,c,v1) Y13(a,v1)
20 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) Y14(c,v1)
21 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) Y15(a,v1)
22 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) Y16(c,v1)
23 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,c,v1) Y17(a,v1)
24 : (    0.50000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o4,o3,a,c) V2(o1,o5,o2,o6)
25 : (    0.50000000) D4(i,o3,k,o4,o1,o5,o2,o6) T2(o4,o3,c,a) V2(o1,o5,o2,o6)
26 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,v1,a) V2(o1,o4,c,v1)
27 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,c) V2(o1,o4,a,v1)
28 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,v1) V2(o1,o4,c,v1)
29 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o2,c,v1) V2(o1,o4,a,v1)
30 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,v1,a) V2(o2,c,o4,v1)
31 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,c) V2(o3,a,o4,v1)
32 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o1,a,v1) V2(o2,c,o4,v1)
33 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o4,c,v1) V2(o1,v1,o2,a)
34 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,v1,v2) V2(a,v1,c,v2)
35 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,v1,v2) V2(a,v2,c,v1)

The content of each effective tensor ....
Y0 <-- (    1.00000000)  h(c1,c1)
```

```
Y1 <-- (    1.00000000)  h(c1,c1)
Y2 <-- (    1.00000000)  V2(c1,c1,c2,c2)
Y3 <-- (    1.00000000)  V2(c1,c2,c1,c2)
Y4 <-- (    1.00000000)  V2(c1,c1,c2,c2)
Y5 <-- (    1.00000000)  V2(c1,c2,c1,c2)
Y6 <-- (    1.00000000)  V2(c1,c1,o1,o4)
Y7 <-- (    1.00000000)  V2(c1,c1,o1,o4)
Y8 <-- (    1.00000000)  V2(c1,o1,c1,o4)
Y9 <-- (    1.00000000)  V2(c1,o1,c1,o4)
Y10 <-- (    1.00000000)  V2(c1,c1,c,v1)
Y11 <-- (    1.00000000)  V2(c1,c1,a,v1)
Y12 <-- (    1.00000000)  V2(c1,c1,c,v1)
Y13 <-- (    1.00000000)  V2(c1,c1,a,v1)
Y14 <-- (    1.00000000)  V2(c1,c,c1,v1)
Y15 <-- (    1.00000000)  V2(c1,a,c1,v1)
Y16 <-- (    1.00000000)  V2(c1,c,c1,v1)
Y17 <-- (    1.00000000)  V2(c1,a,c1,v1)


! No.0
! S2(i,k,a,c)  <--
! (    2.00000000) Y0 D2(i,o2,k,o1) T2(o2,o1,a,c)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... S2(i,k,a,c)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: S2(i,k,a,c)  <--  (    2.00000000) Y0 D2(i,o2,k,o1) T2(o2,o1,a,c)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

Declare Y0 as a scalar

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare S2 as a o^2v^1 tensor
  S2_(c)(i, k, a) += 2 Y0 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,a,)
  Accumulate S2_(c)(i,k,a) for c

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.1
! S2(i,k,a,c)  <--
! (    2.00000000) Y1 D2(i,o2,k,o1) T2(o1,o2,c,a)
Case 0 ..... S2(i,k,c,a)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,c,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)

! The optimal choice is .....
1: S2(i,k,c,a)  <--  (    2.00000000) Y1 D2(i,o2,k,o1) T2(o1,o2,c,a)

! Scaling       : O(o^4v^2)
! Max size of X : o^2

! * Begin scaling analysis .... *

Declare Y1 as a scalar

for c in {vir}:
  Read S2 from GA for c
  for a in {vir}:
    Read T2 from GA for a
    Declare S2 as a o^2 tensor
```



```
    S2_(c)(i, k, a) += 2 Y1 sum(o2,o1) D2(i,o2,k,o1) * T2(o1,o2,c,)
  Accumulate S2_(c)(i,k,a) for c

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.2
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) h(o4,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o4,o1,a,c)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o
3,o2,a,c)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 1 ..... X(i,o3,k,o2)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) h(o4,o1)

! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,o2,o4,o1,a,c)  <----- (    1.00000000)  T2(o3,o2,a,c) h(o4,o1)

! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,o3,k,o2)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) h(o4,o1)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o3,o2,a,c) X(i,o3,k,o2)

! Scaling       : O(o^4v^2)
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare X as a o^4 tensor
X_()(i,o3,k,o2) += 1.0 sum(o4,o1) D3(i,o3,k,o2,o4,o1) * h(o4,o1)

for c in {vir}:
  Read S2 from GA for c
  Read T2 from GA for c
  S2_(c)(i,k,a) += 1.0 sum(o3,o2) T2(o3,o2,a,) * X_()(i,o3,k,o2)

  Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.3
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o2,c,a) h(o1,o4)
Case 0 ..... X(i,k,o1,o4,c,a)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4) T2(o
3,o2,c,a)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 1 ..... X(i,o2,k,o3)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4) h(o1,o4)

! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,o2,o1,o4,c,a)  <----- (    1.00000000)  T2(o3,o2,c,a) h(o1,o4)

! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o2,k,o3)  <--  (    1.00000000)  D3(i,o2,k,o3,o1,o4) h(o1,o4)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o3,o2,c,a) X(i,o2,k,o3)

! Scaling       : O(o^4v^2)
```

```
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare X as a o^4 tensor
X_()(i,o2,k,o3) += 1.0 sum(o1,o4) D3(i,o2,k,o3,o1,o4) * h(o1,o4)

for c in {vir}:
  Read S2 from GA for c
  for a in {vir}
    Read T2 from GA for a
    S2_(c)(i,k,a) += 1.0 sum(o3,o2) T2(o3,o2,c,) * X_()(i,o2,k,o3)

    Accumulate S2_(c)(i,k,a) for c


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.4
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) h(c,v1)
Case 0 ..... X(i,k,v1,a)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,v1,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,c,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) h(c,v1)
! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o1,o2,a,c)  <----- (    1.00000000)  T2(o1,o2,v1,a) h(c,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,v1,a)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,v1,a)
2: S2(i,k,a,c)  <--  (    1.00000000) X(i,k,v1,a) h(c,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Declare X as a o^2v^1 tensor
  X_(a)(i,k,v1) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o1,o2,v1,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 1.0 sum(v1) X_(a)(i,k,v1,) * h(c,v1)

    Accumulate S2_(c)(i,k,a) for c


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.5
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) h(a,v1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,v1,c)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,v1,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) h(a,v1)
! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4v^2)
Case 2 ..... X(o2,o1,c,a)  <----- (    1.00000000)  T2(o2,o1,v1,c) h(a,v1)
```



```
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,v1,c)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,v1,c)
2: S2(i,k,a,c)  <--  (    1.00000000) X(i,k,v1,c) h(a,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare X as a o^2v^1 tensor
  X_(c)(i,k,v1) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,v1,)

  S2_(c)(i,k,a) += 1.0 sum(v1) X_(c)(i,k,v1,) * h(a,v1)

  Accumulate S2_(c)(i,k,a) for c


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.6
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) h(c,v1)
Case 0 ..... X(i,k,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,c,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) h(c,v1)
! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o1,a,c)  <----- (    1.00000000)  T2(o2,o1,a,v1) h(c,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,a,v1)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,v1)
2: S2(i,k,a,c)  <--  (    1.00000000) X(i,k,a,v1) h(c,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^2v^1 tensor
  X_(v1)(i,k,a) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,a,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 1.0 sum() X_(v1)(i,k,a,) * h(c,v1)

    Accumulate S2_(c)(i,k,a) for c


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.7
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,c,v1) h(a,v1)
Case 0 ..... X(i,k,c,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) T2(o2,o1,c,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
```

```
Case 1 ..... X(i,o1,k,o2,a,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) h(a,v1)
! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o2,o1,c,a)  <----- (    1.00000000)  T2(o2,o1,c,v1) h(a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,c,v1)  <--  (    1.00000000)  D2(i,o1,k,o2) T2(o2,o1,c,v1)
2: S2(i,k,a,c)  <--  (    1.00000000) X(i,k,c,v1) h(a,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2

! * Begin scaling analysis .... *

for c in {vir}:
  Read S2 from GA for c
  for v1 in {vir}:
    Read T2 from GA for v1
    Declare X as a o^2 tensor
    X_(c,v1)(i,k) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * T2(o2,o1,c,)

    S2_(c)(i,k,a) += 1.0 sum() X_(c,v1)(i,k,,) * h(a,v1)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.8
! S2(i,k,a,c)  <--
! (    2.00000000) Y2 D2(i,o2,k,o1) T2(o2,o1,a,c)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... S2(i,k,a,c)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: S2(i,k,a,c)  <--  (    2.00000000) Y2 D2(i,o2,k,o1) T2(o2,o1,a,c)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

Declare Y2 as a scalar
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare S2 as a o^2v^1 tensor
  S2_(c)(i, k, a) += 2 Y2 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,a,)
  Accumulate S2_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.9
! S2(i,k,a,c)  <--
! (   -1.00000000) Y3 D2(i,o2,k,o1) T2(o2,o1,a,c)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... S2(i,k,a,c)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
```



```
! The optimal choice is .....
1: S2(i,k,a,c)  <--  (   -1.00000000) Y3 D2(i,o2,k,o1) T2(o2,o1,a,c)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

Declare Y3 as a scalar
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare S2 as a o^2v^1 tensor
  S2_(c)(i, k, a) += Y3 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,a,)
  Accumulate S2_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.10
! S2(i,k,a,c)  <--
! (    2.00000000) Y4 D2(i,o2,k,o1) T2(o1,o2,c,a)
Case 0 ..... S2(i,k,c,a)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,c,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)

! The optimal choice is .....
1: S2(i,k,c,a)  <--  (    2.00000000) Y4 D2(i,o2,k,o1) T2(o1,o2,c,a)

! Scaling       : O(o^4v^2)
! Max size of X : o^2

! * Begin scaling analysis .... *

Declare Y4 as a scalar
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read S2 from GA for c
  for a in {vir}:
    Read T2 from GA for a
    Declare S2 as a o^2 tensor
    S2_(c)(i, k, a) += 2 Y4 sum(o2,o1) D2(i,o2,k,o1) * T2(o1,o2,c,)
  Accumulate S2_(c)(i,k,a) for c

! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.11
! S2(i,k,a,c)  <--
! (   -1.00000000) Y5 D2(i,o2,k,o1) T2(o1,o2,c,a)
Case 0 ..... S2(i,k,c,a)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,c,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)

! The optimal choice is .....
1: S2(i,k,c,a)  <--  (   -1.00000000) Y5 D2(i,o2,k,o1) T2(o1,o2,c,a)

! Scaling       : O(o^4v^2)
! Max size of X : o^2

! * Begin scaling analysis .... *

Declare Y5 as a scalar
for c1 in {core}:
```

```
  Read V2 from GA for c1

for c in {vir}:
  Read S2 from GA for c
  for a in {vir}:
    Read T2 from GA for a
    Declare S2 as a o^2 tensor
    S2_(c)(i, k, a) += Y5 sum(o2,o1) D2(i,o2,k,o1) * T2(o1,o2,c,)
  Accumulate S2_(c)(i,k,a) for c

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.12
! S2(i,k,a,c)  <--
! (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) Y6(o1,o4)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o4,o1,a,c)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o
3,o2,a,c)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 1 ..... X(i,o3,k,o2)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y6(o1,o4
)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,o2,o1,o4,a,c)  <----- (    1.00000000)  T2(o3,o2,a,c) Y6(o1,o4
)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,o3,k,o2)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y6(o1,o4)
2: S2(i,k,a,c)  <--  (    2.00000000) T2(o3,o2,a,c) X(i,o3,k,o2)

! Scaling       : O(o^4v^2)
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare Y6 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^4 tensor
X_()(i,o3,k,o2) += 1.0 sum(o4,o1) D3(i,o3,k,o2,o4,o1) * Y6(o1,o4)

for c in {vir}:
  Read S2 from GA for c
  Read T2 from GA for c
  S2_(c)(i,k,a) += 2 sum(o3,o2) T2(o3,o2,a,) * X_()(i,o3,k,o2)

  Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.13
! S2(i,k,a,c)  <--
! (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,c,a) Y7(o1,o4)
Case 0 ..... X(i,k,o4,o1,c,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o
2,o3,c,a)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 1 ..... X(i,o3,k,o2)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y7(o1,o4
)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o3,o1,o4,c,a)  <----- (    1.00000000)  T2(o2,o3,c,a) Y7(o1,o4
```



```
)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o3,k,o2)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y7(o1,o4)
2: S2(i,k,a,c)  <--  (    2.00000000) T2(o2,o3,c,a) X(i,o3,k,o2)

! Scaling       : O(o^4v^2)
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare Y7 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^4 tensor
X_()(i,o3,k,o2) += 1.0 sum(o4,o1) D3(i,o3,k,o2,o4,o1) * Y7(o1,o4)

for c in {vir}:
  Read S2 from GA for c
  for a in {vir}
    Read T2 from GA for a
    S2_(c)(i,k,a) += 2 sum(o2,o3) T2(o2,o3,c,) * X_()(i,o3,k,o2)

    Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.14
! S2(i,k,a,c)  <--
! (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,c) Y8(o1,o4)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o4,o1,a,c)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o
3,o2,a,c)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 1 ..... X(i,o3,k,o2)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y8(o1,o4
)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,o2,o1,o4,a,c)  <----- (    1.00000000)  T2(o3,o2,a,c) Y8(o1,o4
)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,o3,k,o2)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y8(o1,o4)
2: S2(i,k,a,c)  <--  (   -1.00000000) T2(o3,o2,a,c) X(i,o3,k,o2)

! Scaling       : O(o^4v^2)
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare Y8 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^4 tensor
X_()(i,o3,k,o2) += 1.0 sum(o4,o1) D3(i,o3,k,o2,o4,o1) * Y8(o1,o4)

for c in {vir}:
  Read S2 from GA for c
```

```
  Read T2 from GA for c
  S2_(c)(i,k,a) += -1 sum(o3,o2) T2(o3,o2,a,) * X_()(i,o3,k,o2)

  Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.15
! S2(i,k,a,c)  <--
! (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,c,a) Y9(o1,o4)
Case 0 ..... X(i,k,o4,o1,c,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o
2,o3,c,a)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 1 ..... X(i,o3,k,o2)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y9(o1,o4
)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o3,o1,o4,c,a)  <----- (    1.00000000)  T2(o2,o3,c,a) Y9(o1,o4
)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o3,k,o2)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y9(o1,o4)
2: S2(i,k,a,c)  <--  (   -1.00000000) T2(o2,o3,c,a) X(i,o3,k,o2)

! Scaling       : O(o^4v^2)
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare Y9 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^4 tensor
X_()(i,o3,k,o2) += 1.0 sum(o4,o1) D3(i,o3,k,o2,o4,o1) * Y9(o1,o4)

for c in {vir}:
  Read S2 from GA for c
  for a in {vir}
    Read T2 from GA for a
    S2_(c)(i,k,a) += -1 sum(o2,o3) T2(o2,o3,c,) * X_()(i,o3,k,o2)

    Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.16
! S2(i,k,a,c)  <--
! (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) Y10(c,v1)
Case 0 ..... X(i,k,v1,a)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,v1,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,c,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y10(c,v1)

! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o1,o2,a,c)  <----- (    1.00000000)  T2(o1,o2,v1,a) Y10(c,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Factorize: Conflict between choices of optimal memory usage and polynomial order
```



```
 ...

! The optimal choice is .....
1: X(i,k,v1,a)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,v1,a)
2: S2(i,k,a,c)  <--  (    2.00000000) X(i,k,v1,a) Y10(c,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

Declare Y10 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Declare X as a o^2v^1 tensor
  X_(a)(i,k,v1) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o1,o2,v1,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 2 sum(v1) X_(a)(i,k,v1,) * Y10(c,v1)

    Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.17
! S2(i,k,a,c)  <--
! (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) Y11(a,v1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,v1,c)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,v1,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y11(a,v1)

! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4v^2)
Case 2 ..... X(o2,o1,c,a)  <----- (    1.00000000)  T2(o2,o1,v1,c) Y11(a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,v1,c)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,v1,c)
2: S2(i,k,a,c)  <--  (    2.00000000) X(i,k,v1,c) Y11(a,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

Declare Y11 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare X as a o^2v^1 tensor
  X_(c)(i,k,v1) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,v1,)

  S2_(c)(i,k,a) += 2 sum(v1) X_(c)(i,k,v1,) * Y11(a,v1)

  Accumulate S2_(c)(i,k,a) for c
```

```
! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.18
! S2(i,k,a,c)  <--
! (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) Y12(c,v1)
Case 0 ..... X(i,k,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,c,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y12(c,v1)

! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o1,a,c)  <----- (    1.00000000)  T2(o2,o1,a,v1) Y12(c,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,a,v1)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,v1)
2: S2(i,k,a,c)  <--  (    2.00000000) X(i,k,a,v1) Y12(c,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

Declare Y12 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^2v^1 tensor
  X_(v1)(i,k,a) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,a,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 2 sum() X_(v1)(i,k,a,) * Y12(c,v1)

    Accumulate S2_(c)(i,k,a) for c


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.19
! S2(i,k,a,c)  <--
! (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,c,v1) Y13(a,v1)
Case 0 ..... X(i,k,c,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,c,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Case 1 ..... X(i,o2,k,o1,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y13(a,v1)

! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o1,o2,c,a)  <----- (    1.00000000)  T2(o1,o2,c,v1) Y13(a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,c,v1)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,c,v1)
2: S2(i,k,a,c)  <--  (    2.00000000) X(i,k,c,v1) Y13(a,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2

! * Begin scaling analysis .... *

Declare Y13 as a tensor
```



```
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read S2 from GA for c
  for v1 in {vir}:
    Read T2 from GA for v1
    Declare X as a o^2 tensor
    X_(c,v1)(i,k) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o1,o2,c,)

    S2_(c)(i,k,a) += 2 sum() X_(c,v1)(i,k,,) * Y13(a,v1)

    Accumulate S2_(c)(i,k,a) for c


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.20
! S2(i,k,a,c)  <--
! (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,v1,a) Y14(c,v1)
Case 0 ..... X(i,k,v1,a)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,v1,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,c,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y14(c,v1)

! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o1,o2,a,c)  <----- (    1.00000000)  T2(o1,o2,v1,a) Y14(c,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,v1,a)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,v1,a)
2: S2(i,k,a,c)  <--  (   -1.00000000) X(i,k,v1,a) Y14(c,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

Declare Y14 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Declare X as a o^2v^1 tensor
  X_(a)(i,k,v1) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o1,o2,v1,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += -1 sum(v1) X_(a)(i,k,v1,) * Y14(c,v1)

    Accumulate S2_(c)(i,k,a) for c


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.21
! S2(i,k,a,c)  <--
! (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,c) Y15(a,v1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,v1,c)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,v1,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
```

```
Case 1 ..... X(i,o2,k,o1,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y15(a,v1)

! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4v^2)
Case 2 ..... X(o2,o1,c,a)  <----- (    1.00000000)  T2(o2,o1,v1,c) Y15(a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,v1,c)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,v1,c)
2: S2(i,k,a,c)  <--  (   -1.00000000) X(i,k,v1,c) Y15(a,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

Declare Y15 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare X as a o^2v^1 tensor
  X_(c)(i,k,v1) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,v1,)

  S2_(c)(i,k,a) += -1 sum(v1) X_(c)(i,k,v1,) * Y15(a,v1)

  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.22
! S2(i,k,a,c)  <--
! (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,a,v1) Y16(c,v1)
Case 0 ..... X(i,k,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,c,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y16(c,v1)

! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o1,a,c)  <----- (    1.00000000)  T2(o2,o1,a,v1) Y16(c,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,a,v1)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,a,v1)
2: S2(i,k,a,c)  <--  (   -1.00000000) X(i,k,a,v1) Y16(c,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

Declare Y16 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^2v^1 tensor
  X_(v1)(i,k,a) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,a,)

  for c in {vir}:
    Read S2 from GA for c
```



```
    S2_(c)(i,k,a) += -1 sum() X_(v1)(i,k,a,) * Y16(c,v1)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.23
! S2(i,k,a,c)  <--
! (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,c,v1) Y17(a,v1)
Case 0 ..... X(i,k,c,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,c,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Case 1 ..... X(i,o2,k,o1,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y17(a,v1)

! Polynomial order is O(o^4v^3)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o1,o2,c,a)  <----- (    1.00000000)  T2(o1,o2,c,v1) Y17(a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,c,v1)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,c,v1)
2: S2(i,k,a,c)  <--  (   -1.00000000) X(i,k,c,v1) Y17(a,v1)

! Scaling       : O(o^4v^2)
! Max size of X : o^2

! * Begin scaling analysis .... *

Declare Y17 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read S2 from GA for c
  for v1 in {vir}:
    Read T2 from GA for v1
    Declare X as a o^2 tensor
    X_(c,v1)(i,k) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o1,o2,c,)

    S2_(c)(i,k,a) += -1 sum() X_(c,v1)(i,k,,) * Y17(a,v1)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.24
! S2(i,k,a,c)  <--
! (    0.50000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o4,o3,a,c) V2(o1,o5,o2,o6)
! Indices of BareAmp are rotated to match with LHS.
! Indices of ERI and D4 are rotated to match with each other.
H2: 0 D4: 25
*TEST* (    0.50000000) D4(o1,o5,o4,i,o3,k,o2,o6) T2(o4,o3,a,c) V2(o1,o5,o2,o6)
! *** D4(o1,o5,o4,i,o3,k,o2,o6) T2(o4,o3,a,c)  is skipped due to the priority
Case 1 ..... X(o4,i,o3,k)  <----- (    1.00000000)  D4(o1,o5,o4,i,o3,k,o2,o6) V2
(o1,o5,o2,o6)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o4,o3,o1,o5,o2,o6,a,c)  <----- (    1.00000000)  T2(o4,o3,a,c) V2
(o1,o5,o2,o6)
! Polynomial order is O(o^8v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(o4,i,o3,k)  <--  (    1.00000000)  D4(o1,o5,o4,i,o3,k,o2,o6) V2(o1,o5,o2,o6
```

```
)
2: S2(i,k,a,c)  <--  (    0.50000000) T2(o4,o3,a,c) X(o4,i,o3,k)

! Scaling       : O(o^8)
! Max size of X : o^4

! * Begin scaling analysis .... *

! Intermediate is not processed in ad hoc fashion ....

Declare X as a o^4 tensor
for o1 in {occ}:
  Read V2 from GA for o1
  for o5 in {occ}:
    Read D4 from GA for o1,o5
    X_()(o4,i,o3,k) += 1.0 sum(o2,o6) V2(,o5,o2,o6) * D4(,,o4,i,o3,k,o2,o6)

for c in {vir}:
  Read S2 from GA for c
  Read T2 from GA for c
  S2_(c)(i,k,a) += 0.5 sum(o4,o3) T2(o4,o3,a,) * X_()(o4,i,o3,k)

  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.25
! S2(i,k,a,c)  <--
! (    0.50000000) D4(i,o3,k,o4,o1,o5,o2,o6) T2(o4,o3,c,a) V2(o1,o5,o2,o6)
! Indices of ERI and D4 are rotated to match with each other.
H2: 0 D4: 24
*TEST* (    0.50000000) D4(o1,o5,i,o3,k,o4,o2,o6) T2(o4,o3,c,a) V2(o1,o5,o2,o6)
! *** D4(o1,o5,i,o3,k,o4,o2,o6) T2(o4,o3,c,a)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o4)  <----- (    1.00000000)  D4(o1,o5,i,o3,k,o4,o2,o6) V2
(o1,o5,o2,o6)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o4,o3,o1,o5,o2,o6,c,a)  <----- (    1.00000000)  T2(o4,o3,c,a) V2
(o1,o5,o2,o6)
! Polynomial order is O(o^8v^2)
! Maximum memory usage is O(o^4)

! The optimal choice is .....
1: X(i,o3,k,o4)  <--  (    1.00000000)  D4(o1,o5,i,o3,k,o4,o2,o6) V2(o1,o5,o2,o6
)
2: S2(i,k,a,c)  <--  (    0.50000000) T2(o4,o3,c,a) X(i,o3,k,o4)

! Scaling       : O(o^8)
! Max size of X : o^4

! * Begin scaling analysis .... *

! Intermediate is not processed in ad hoc fashion ....

Declare X as a o^4 tensor
for o1 in {occ}:
  Read V2 from GA for o1
  for o5 in {occ}:
    Read D4 from GA for o1,o5
    X_()(i,o3,k,o4) += 1.0 sum(o2,o6) V2(,o5,o2,o6) * D4(,,i,o3,k,o4,o2,o6)

for c in {vir}:
  Read S2 from GA for c
  for a in {vir}
    Read T2 from GA for a
    S2_(c)(i,k,a) += 0.5 sum(o4,o3) T2(o4,o3,c,) * X_()(i,o3,k,o4)
```



```
    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.26
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,v1,a) V2(o1,o4,c,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o3,k,o2,o4,o1) T2(o2,o3,v1,a)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o2,c,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
c,v1,o1,o4)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o2,o3,o1,o4,a,c)  <----- (    1.00000000)  T2(o2,o3,v1,a) V2(c,v1
,o1,o4)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o3,k,o2,c,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(c,v1,o1,o4)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o2,o3,v1,a) X(i,o3,k,o2,c,v1)

! Scaling       : O(o^6v^2)
! Max size of X : o^4v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^4v^1 tensor
  X_(c)(i,o3,k,o2,v1) += 1.0 sum(o1,o4) V2(,v1,o1,o4) * D3(i,o3,k,o2,o4,o1)

  for a in {vir}
    Read T2 from GA for a
    S2_(c)(i,k,a) += 1.0 sum(o2,o3,v1) T2(o2,o3,v1,) * X_(c)(i,o3,k,o2,,v1)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.27
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,c) V2(o1,o4,a,v1)
! Indices of BareAmp are rotated to match with LHS.
! The indices of ERI are rotated to became virtual.
! *** D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,c)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o2,a,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
a,v1,o1,o4)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o3,o2,o1,o4,c,a)  <----- (    1.00000000)  T2(o3,o2,v1,c) V2(a,v1
,o1,o4)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o3,k,o2,a,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(a,v1,o1,o4)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o3,o2,v1,c) X(i,o3,k,o2,a,v1)

! Scaling       : O(o^6v^2)
```

```
! Max size of X : o^4v^1

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Declare X as a o^4v^1 tensor
  X_(a)(i,o3,k,o2,v1) += 1.0 sum(o1,o4) V2(,v1,o1,o4) * D3(i,o3,k,o2,o4,o1)

  for c in {vir}:
    Read S2 from GA for c
    Read T2 from GA for c
    S2_(c)(i,k,a) += 1.0 sum(o3,o2,v1) T2(o3,o2,v1,) * X_(a)(i,o3,k,o2,,v1)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.28
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,v1) V2(o1,o4,c,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o3,k,o2,o4,o1) T2(o3,o2,a,v1)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o2,c,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
c,v1,o1,o4)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,o2,o1,o4,a,c)  <----- (    1.00000000)  T2(o3,o2,a,v1) V2(c,v1
,o1,o4)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,o3,k,o2,c,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(c,v1,o1,o4)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o3,o2,a,v1) X(i,o3,k,o2,c,v1)

! Scaling       : O(o^6v^2)
! Max size of X : o^4

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  for v1 in {vir}:
    Read T2 from GA for v1
    Declare X as a o^4 tensor
    X_(c,v1)(i,o3,k,o2) += 1.0 sum(o1,o4) V2(,v1,o1,o4) * D3(i,o3,k,o2,o4,o1)

    S2_(c)(i,k,a) += 1.0 sum(o3,o2) T2(o3,o2,a,) * X_(c,v1)(i,o3,k,o2,,)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.29
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o2,c,v1) V2(o1,o4,a,v1)
! Indices of ERI are rotated to match with Bareamp.
! *** D3(i,o2,k,o3,o1,o4) T2(o3,o2,c,v1)  is skipped due to the priority
Case 1 ..... X(i,o2,k,o3,v1,a)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4) V2(
v1,a,o1,o4)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o3,o2,o1,o4,c,a)  <----- (    1.00000000)  T2(o3,o2,c,v1) V2(v1,a
```



```
,o1,o4)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,o2,k,o3,v1,a)  <--  (    1.00000000)  D3(i,o2,k,o3,o1,o4) V2(v1,a,o1,o4)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o3,o2,c,v1) X(i,o2,k,o3,v1,a)

! Scaling       : O(o^6v^2)
! Max size of X : o^4v^1

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read V2 from GA for v1
  Read T2 from GA for v1
  Declare X as a o^4v^1 tensor
  X_(v1)(i,o2,k,o3,a) += 1.0 sum(o1,o4) V2(,a,o1,o4) * D3(i,o2,k,o3,o1,o4)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 1.0 sum(o3,o2) T2(o3,o2,c,) * X_(v1)(i,o2,k,o3,,a)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.30
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,v1,a) V2(o2,c,o4,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o3,k,o2,o4,o1) T2(o1,o3,v1,a)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o1,c,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
c,o2,o4,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o1,o3,o2,o4,a,c)  <----- (    1.00000000)  T2(o1,o3,v1,a) V2(c,o2
,o4,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o3,k,o1,c,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(c,o2,o4,v1)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o1,o3,v1,a) X(i,o3,k,o1,c,v1)

! Scaling       : O(o^6v^2)
! Max size of X : o^4v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^4v^1 tensor
  X_(c)(i,o3,k,o1,v1) += 1.0 sum(o2,o4) V2(,o2,o4,v1) * D3(i,o3,k,o2,o4,o1)

  for a in {vir}
    Read T2 from GA for a
    S2_(c)(i,k,a) += 1.0 sum(o1,o3,v1) T2(o1,o3,v1,) * X_(c)(i,o3,k,o1,,v1)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------
```

```
! No.31
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,c) V2(o3,a,o4,v1)
! Indices of BareAmp are rotated to match with LHS.
! The indices of ERI are rotated to became virtual.
! *** D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,c)  is skipped due to the priority
Case 1 ..... X(i,k,o2,o1,a,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
a,o3,o4,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o1,o2,o3,o4,c,a)  <----- (    1.00000000)  T2(o1,o2,v1,c) V2(a,o3
,o4,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o2,o1,a,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(a,o3,o4,v1)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o1,o2,v1,c) X(i,k,o2,o1,a,v1)

! Scaling       : O(o^6v^2)
! Max size of X : o^4v^1

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Declare X as a o^4v^1 tensor
  X_(a)(i,k,o2,o1,v1) += 1.0 sum(o3,o4) V2(,o3,o4,v1) * D3(i,o3,k,o2,o4,o1)

  for c in {vir}:
    Read S2 from GA for c
    Read T2 from GA for c
    S2_(c)(i,k,a) += 1.0 sum(o1,o2,v1) T2(o1,o2,v1,) * X_(a)(i,k,o2,o1,,v1)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.32
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o1,a,v1) V2(o2,c,o4,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o3,k,o2,o4,o1) T2(o3,o1,a,v1)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o1,c,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
c,o2,o4,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,o1,o2,o4,a,c)  <----- (    1.00000000)  T2(o3,o1,a,v1) V2(c,o2
,o4,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,o3,k,o1,c,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(c,o2,o4,v1)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o3,o1,a,v1) X(i,o3,k,o1,c,v1)

! Scaling       : O(o^6v^2)
! Max size of X : o^4

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
```



```
  for v1 in {vir}:
    Read T2 from GA for v1
    Declare X as a o^4 tensor
    X_(c,v1)(i,o3,k,o1) += 1.0 sum(o2,o4) V2(,o2,o4,v1) * D3(i,o3,k,o2,o4,o1)

    S2_(c)(i,k,a) += 1.0 sum(o3,o1) T2(o3,o1,a,) * X_(c,v1)(i,o3,k,o1,,)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.33
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o3,o4,c,v1) V2(o1,v1,o2,a)
! Indices of ERI are rotated to match with Bareamp.
! *** D3(i,o2,k,o3,o1,o4) T2(o3,o4,c,v1)  is skipped due to the priority
Case 1 ..... X(i,k,o3,o4,v1,a)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4) V2(
v1,o1,o2,a)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 2 ..... X(o3,o4,o1,o2,c,a)  <----- (    1.00000000)  T2(o3,o4,c,v1) V2(v1,o
1,o2,a)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,k,o3,o4,v1,a)  <--  (    1.00000000)  D3(i,o2,k,o3,o1,o4) V2(v1,o1,o2,a)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o3,o4,c,v1) X(i,k,o3,o4,v1,a)

! Scaling       : O(o^6v^2)
! Max size of X : o^4v^1

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read V2 from GA for v1
  Read T2 from GA for v1
  Declare X as a o^4v^1 tensor
  X_(v1)(i,k,o3,o4,a) += 1.0 sum(o1,o2) V2(,o1,o2,a) * D3(i,o2,k,o3,o1,o4)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 1.0 sum(o3,o4) T2(o3,o4,c,) * X_(v1)(i,k,o3,o4,,a)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.34
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,v1,v2) V2(a,v1,c,v2)
! Indices of ERI are rotated to match with LHS.
! *** D2(i,o1,k,o2) T2(o1,o2,v1,v2)  is skipped due to the priority
Case 1 ..... X(i,o1,k,o2,c,v2,a,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) V2(c
,v2,a,v1)
! Polynomial order is O(o^4v^4)
! Maximum memory usage is O(o^4v^2)
Case 2 ..... X(o1,o2,c,a)  <----- (    1.00000000)  T2(o1,o2,v1,v2) V2(c,v2,a,v1
)
! Polynomial order is O(o^2v^4)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(o1,o2,c,a)  <--  (    1.00000000)  T2(o1,o2,v1,v2) V2(c,v2,a,v1)
2: S2(i,k,a,c)  <--  (    1.00000000) D2(i,o1,k,o2) X(o1,o2,c,a)
```

```
! Scaling       : O(o^2v^4)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^2v^1 tensor
  for v2 in {vir}:
    Read T2 from GA for v2
    X_(c)(o1,o2,a) += 1.0 sum(v1) V2(,v2,a,v1) * T2(o1,o2,v1,)

  S2_(c)(i,k,a) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * X_(c)(o1,o2,,a)

  Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.35
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,v1,v2) V2(a,v2,c,v1)
! Indices of ERI are rotated to match with LHS.
! *** D2(i,o1,k,o2) T2(o2,o1,v1,v2)  is skipped due to the priority
Case 1 ..... X(i,o1,k,o2,c,v1,a,v2)  <----- (    1.00000000)  D2(i,o1,k,o2) V2(c
,v1,a,v2)
! Polynomial order is O(o^4v^4)
! Maximum memory usage is O(o^4v^2)
Case 2 ..... X(o2,o1,c,a)  <----- (    1.00000000)  T2(o2,o1,v1,v2) V2(c,v1,a,v2
)
! Polynomial order is O(o^2v^4)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(o2,o1,c,a)  <--  (    1.00000000)  T2(o2,o1,v1,v2) V2(c,v1,a,v2)
2: S2(i,k,a,c)  <--  (    1.00000000) D2(i,o1,k,o2) X(o2,o1,c,a)

! Scaling       : O(o^2v^4)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^2v^1 tensor
  for v2 in {vir}:
    Read T2 from GA for v2
    X_(c)(o2,o1,a) += 1.0 sum(v1) V2(,v1,a,v2) * T2(o2,o1,v1,)

  S2_(c)(i,k,a) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * X_(c)(o2,o1,,a)

  Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

* 2 <oovv/ooov>

(    0.50000000) T2(o1,o2,o3,a) V2(c1,o4,c2,c) E4(c1,i,k,o3,c2,o2,o4,o1)
(    0.50000000) T2(o1,o2,o3,c) V2(c1,o4,c2,a) E4(c1,i,k,o3,c2,o4,o2,o1)
(    0.50000000) T2(o1,o2,o3,a) V2(c1,o3,c2,c) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,o3,c) V2(c1,o3,c2,a) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,o3,a) V2(c1,c2,o4,c) E4(c1,i,k,o3,o4,o2,c2,o1)
(    0.50000000) T2(o1,o2,o3,c) V2(c1,c2,o4,a) E4(c1,i,k,o3,o4,c2,o2,o1)
```



```
(    0.50000000) T2(o1,o2,o3,a) V2(c1,c2,o3,c) E3(c1,i,k,o1,o2,c2)
(    0.50000000) T2(o1,o2,o3,c) V2(c1,c2,o3,a) E3(c1,i,k,o1,c2,o2)
(    0.50000000) T2(o1,o2,o3,a) V2(o4,o6,o5,c) E4(i,k,o3,o4,o2,o6,o1,o5)
(    0.50000000) T2(o1,o2,o3,c) V2(o4,o6,o5,a) E4(i,k,o3,o4,o6,o2,o1,o5)
(    0.50000000) T2(o1,o2,o3,a) V2(o3,o5,o4,c) E3(i,k,o4,o2,o5,o1)
(    0.50000000) T2(o1,o2,o3,c) V2(o3,o5,o4,a) E3(i,k,o4,o5,o2,o1)
(    0.50000000) T2(o1,o2,o3,a) V2(o3,o4,c,o5) E3(i,k,o4,o2,o1,o5)
(    0.50000000) T2(o1,o2,o3,c) V2(o3,o4,a,o5) E3(i,k,o4,o1,o2,o5)
(    0.50000000) T2(o1,o2,o3,a) V2(c1,c2,o4,c) E4(c1,i,k,o3,o4,o2,c2,o1)
(    0.50000000) T2(o1,o2,o3,c) V2(c1,c2,o4,a) E4(c1,i,k,o3,o4,c2,o2,o1)
(    0.50000000) T2(o1,o2,o3,a) V2(c1,c2,o3,c) E3(c1,i,k,o1,o2,c2)
(    0.50000000) T2(o1,o2,o3,c) V2(c1,c2,o3,a) E3(c1,i,k,o1,c2,o2)
(    0.50000000) T2(o1,o2,o3,a) V2(c1,o4,c2,c) E4(c1,i,k,o3,c2,o2,o4,o1)
(    0.50000000) T2(o1,o2,o3,c) V2(c1,o4,c2,a) E4(c1,i,k,o3,c2,o4,o2,o1)
(    0.50000000) T2(o1,o2,o3,a) V2(c1,o3,c2,c) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,o3,c) V2(c1,o3,c2,a) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,o3,a) V2(o4,o5,o6,c) E4(i,k,o3,o4,o2,o5,o1,o6)
(    0.50000000) T2(o1,o2,o3,c) V2(o4,o5,o6,a) E4(i,k,o3,o4,o5,o2,o1,o6)
(    0.50000000) T2(o1,o2,o3,a) V2(o3,o5,o4,c) E3(i,k,o4,o2,o5,o1)
(    0.50000000) T2(o1,o2,o3,c) V2(o3,o5,o4,a) E3(i,k,o4,o5,o2,o1)
(    0.50000000) T2(o1,o2,o3,a) V2(o3,o4,c,o5) E3(i,k,o4,o2,o1,o5)
(    0.50000000) T2(o1,o2,o3,c) V2(o3,o4,a,o5) E3(i,k,o4,o1,o2,o5)
(    0.50000000) T2(o1,o2,o3,v1) V2(o4,c,a,v1) E3(i,k,o3,o4,o2,o1)
(    0.50000000) T2(o1,o2,o3,v1) V2(o4,a,c,v1) E3(i,k,o3,o2,o4,o1)
(    0.50000000) T2(o1,o2,o3,v1) V2(o3,c,a,v1) E2(i,k,o1,o2)
(    0.50000000) T2(o1,o2,o3,v1) V2(o3,a,c,v1) E2(i,k,o2,o1)
(    0.50000000) T2(o1,o2,o3,v1) V2(o4,a,c,v1) E3(i,k,o3,o2,o4,o1)
(    0.50000000) T2(o1,o2,o3,v1) V2(o4,c,a,v1) E3(i,k,o3,o4,o2,o1)
(    0.50000000) T2(o1,o2,o3,v1) V2(o3,a,c,v1) E2(i,k,o2,o1)
(    0.50000000) T2(o1,o2,o3,v1) V2(o3,c,a,v1) E2(i,k,o1,o2)

Decompose RDMs .....


< RESULT >
    0 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o1,o3,o4,a) h(o2,c)
    1 : (    1.00000000) D3(i,k,o1,o2,o3,o4) T2(o4,o3,o1,c) h(o2,a)
    2 : (    1.00000000) D2(i,k,o3,o2) T2(o2,o3,o1,a) h(o1,c)
    3 : (    1.00000000) D2(i,k,o1,o2) T2(o1,o2,o3,c) h(o3,a)
    4 : (    2.00000000) D3(i,k,o4,o3,o2,o1) T2(o1,o3,o4,a) V2(c1,o2,c1,c)
    5 : (    2.00000000) D3(i,k,o4,o3,o2,o1) T2(o1,o2,o4,c) V2(c1,o3,c1,a)
    6 : (    2.00000000) D2(i,k,o3,o2) T2(o2,o3,o1,a) V2(c1,o1,c1,c)
    7 : (    2.00000000) D2(i,k,o3,o2) T2(o3,o2,o1,c) V2(c1,o1,c1,a)
    8 : (   -1.00000000) D3(i,k,o4,o3,o2,o1) T2(o1,o3,o4,a) V2(c1,c1,o2,c)
    9 : (   -1.00000000) D3(i,k,o4,o3,o2,o1) T2(o1,o2,o4,c) V2(c1,c1,o3,a)
   10 : (   -1.00000000) D2(i,k,o3,o2) T2(o2,o3,o1,a) V2(c1,c1,o1,c)
   11 : (   -1.00000000) D2(i,k,o3,o2) T2(o3,o2,o1,c) V2(c1,c1,o1,a)
   12 : (    1.00000000) D4(i,k,o6,o5,o4,o3,o2,o1) T2(o2,o4,o6,a) V2(o5,o3,o1,c)

   13 : (    1.00000000) D4(i,k,o1,o2,o3,o4,o5,o6) T2(o5,o4,o1,c) V2(o2,o3,o6,a)

   14 : (    1.00000000) D3(i,k,o5,o4,o3,o2) T2(o2,o4,o1,a) V2(o5,o3,o1,c)
   15 : (    1.00000000) D3(i,k,o5,o4,o3,o2) T2(o2,o3,o1,c) V2(o5,o4,o1,a)
   16 : (    1.00000000) D3(i,k,o5,o4,o3,o2) T2(o3,o4,o1,a) V2(o5,o1,o2,c)
   17 : (    1.00000000) D3(i,k,o5,o4,o3,o2) T2(o4,o3,o1,c) V2(o5,o1,o2,a)
   18 : (    1.00000000) D3(i,k,o1,o2,o3,o4) T2(o4,o3,o1,v1) V2(o2,c,a,v1)
   19 : (    1.00000000) D3(i,k,o1,o2,o3,o4) T2(o4,o2,o1,v1) V2(o3,a,c,v1)
   20 : (    1.00000000) D2(i,k,o1,o2) T2(o1,o2,o3,v1) V2(o3,c,a,v1)
   21 : (    1.00000000) D2(i,k,o1,o2) T2(o2,o1,o3,v1) V2(o3,a,c,v1)


< RESULT2 >
    0 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) h(o2,c)
    1 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,c) h(o2,a)
    2 : (    1.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) h(o1,c)
    3 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,c) h(o3,a)
    4 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) V2(c1,c1,o2,c)
    5 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c) V2(c1,c1,o3,a)
    6 : (    2.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) V2(c1,c1,o1,c)
```

```
    7 : (    2.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,c) V2(c1,c1,o1,a)
    8 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) V2(c1,o2,c1,c)
    9 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c) V2(c1,o3,c1,a)
   10 : (   -1.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) V2(c1,o1,c1,c)
   11 : (   -1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,c) V2(c1,o1,c1,a)
   12 : (    1.00000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o2,o4,o6,a) V2(o1,o5,o3,c)

   13 : (    1.00000000) D4(i,o3,k,o4,o1,o5,o2,o6) T2(o5,o4,o1,c) V2(o2,o6,o3,a)

   14 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o4,o1,a) V2(o1,o5,o3,c)
   15 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,c) V2(o1,o5,o4,a)
   16 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o3,o4,o1,a) V2(o1,c,o2,o5)
   17 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,c) V2(o1,a,o2,o5)
   18 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1) V2(o2,a,c,v1)
   19 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1) V2(o3,c,a,v1)
   20 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,v1) V2(o3,a,c,v1)
   21 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,o3,v1) V2(o3,c,a,v1)

< RESULT >
    0 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) h(o2,c)
    1 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,c) h(o2,a)
    2 : (    1.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) h(o1,c)
    3 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,c) h(o3,a)
    4 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) V2(c1,c1,o2,c)
    5 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c) V2(c1,c1,o3,a)
    6 : (    2.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) V2(c1,c1,o1,c)
    7 : (    2.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,c) V2(c1,c1,o1,a)
    8 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) V2(c1,o2,c1,c)
    9 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c) V2(c1,o3,c1,a)
   10 : (   -1.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) V2(c1,o1,c1,c)
   11 : (   -1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,c) V2(c1,o1,c1,a)
   12 : (    1.00000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o2,o4,o6,a) V2(o1,o5,o3,c)

   13 : (    1.00000000) D4(i,o3,k,o4,o1,o5,o2,o6) T2(o5,o4,o1,c) V2(o2,o6,o3,a)

   14 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o4,o1,a) V2(o1,o5,o3,c)
   15 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,c) V2(o1,o5,o4,a)
   16 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o3,o4,o1,a) V2(o1,c,o2,o5)
   17 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,c) V2(o1,a,o2,o5)
   18 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1) V2(o2,a,c,v1)
   19 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1) V2(o3,c,a,v1)
   20 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,v1) V2(o3,a,c,v1)
   21 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,o3,v1) V2(o3,c,a,v1)
Setting up parameters as default ....

       :::::::::: :::::::::::   :::   ::: :::::::::::: ::::::::
      :+:        :+:         :+:+: :+:+:    :+:    :+:    :+:
     +:+        +:+        +:+ +:+:+ +:+   +:+    +:+    +:+
    :#::+::#   +#++:++#   +#+  +:+  +#+   +#+    +#+    +:+
   +#+        +#+        +#+       +#+   +#+    +#+    +#+
  #+#        #+#        #+#       #+#   #+#    #+#    #+#
 ###        ########## ###       ###   ###     ########


! * 8 terms are replaced in the linking process ....


The linked formulas ....
0 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) h(o2,c)
1 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,c) h(o2,a)
2 : (    1.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) h(o1,c)
3 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,c) h(o3,a)
4 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) Y0(o2,c)
5 : (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c) Y1(o3,a)
6 : (    2.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) Y2(o1,c)
7 : (    2.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,c) Y3(o1,a)
8 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) Y4(o2,c)
9 : (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c) Y5(o3,a)
10 : (   -1.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) Y6(o1,c)
```



```
11 : (   -1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,c) Y7(o1,a)
12 : (    1.00000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o2,o4,o6,a) V2(o1,o5,o3,c)
13 : (    1.00000000) D4(i,o3,k,o4,o1,o5,o2,o6) T2(o5,o4,o1,c) V2(o2,o6,o3,a)
14 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o4,o1,a) V2(o1,o5,o3,c)
15 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,c) V2(o1,o5,o4,a)
16 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o3,o4,o1,a) V2(o1,c,o2,o5)
17 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,c) V2(o1,a,o2,o5)
18 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1) V2(o2,a,c,v1)
19 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1) V2(o3,c,a,v1)
20 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,v1) V2(o3,a,c,v1)
21 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,o3,v1) V2(o3,c,a,v1)

The content of each effective tensor ....
Y0 <-- (    1.00000000)  V2(c1,c1,o2,c)
Y1 <-- (    1.00000000)  V2(c1,c1,o3,a)
Y2 <-- (    1.00000000)  V2(c1,c1,o1,c)
Y3 <-- (    1.00000000)  V2(c1,c1,o1,a)
Y4 <-- (    1.00000000)  V2(c1,o2,c1,c)
Y5 <-- (    1.00000000)  V2(c1,o3,c1,a)
Y6 <-- (    1.00000000)  V2(c1,o1,c1,c)
Y7 <-- (    1.00000000)  V2(c1,o1,c1,a)


! No.0
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) h(o2,c)
Case 0 ..... X(i,k,o2,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o3,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o4,o1,c)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) h(o
2,c)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o1,o3,o4,o2,a,c)  <----- (    1.00000000)  T2(o1,o3,o4,a) h(o2,c)

! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)

! The optimal choice is .....
1: X(i,k,o2,a)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a)
2: S2(i,k,a,c)  <--  (    1.00000000) X(i,k,o2,a) h(o2,c)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,k,o2) += 1.0 sum(o3,o4,o1) D3(i,o3,k,o2,o4,o1) * T2(o1,o3,o4,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 1.0 sum(o2) X_(a)(i,k,o2,) * h(o2,c)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.1
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,c) h(o2,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o2,k,c)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4) T2(o4,o3,
o1,c)
```

```
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,k,o3,o1,o4,a)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4) h(o
2,a)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o4,o3,o1,o2,c,a)  <----- (    1.00000000)  T2(o4,o3,o1,c) h(o2,a)

! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,o2,k,c)  <--  (    1.00000000)  D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,c)
2: S2(i,k,a,c)  <--  (    1.00000000) X(i,o2,k,c) h(o2,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare X as a o^3 tensor
  X_(c)(i,o2,k) += 1.0 sum(o3,o1,o4) D3(i,o2,k,o3,o1,o4) * T2(o4,o3,o1,)

  S2_(c)(i,k,a) += 1.0 sum(o2) X_(c)(i,o2,k,) * h(o2,a)

  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.2
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) h(o1,c)
Case 0 ..... X(i,k,o1,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o2,o3,o1,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o2,o1,c)  <----- (    1.00000000)  D2(i,o3,k,o2) h(o1,c)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,a,c)  <----- (    1.00000000)  T2(o2,o3,o1,a) h(o1,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o1,a)  <--  (    1.00000000)  D2(i,o3,k,o2) T2(o2,o3,o1,a)
2: S2(i,k,a,c)  <--  (    1.00000000) X(i,k,o1,a) h(o1,c)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,k,o1) += 1.0 sum(o3,o2) D2(i,o3,k,o2) * T2(o2,o3,o1,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 1.0 sum(o1) X_(a)(i,k,o1,) * h(o1,c)

    Accumulate S2_(c)(i,k,a) for c
```



```
! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.3
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,c) h(o3,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o3,c)  <----- (    1.00000000)  D2(i,o1,k,o2) T2(o1,o2,o3,c)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o1,k,o2,o3,a)  <----- (    1.00000000)  D2(i,o1,k,o2) h(o3,a)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o1,o2,c,a)  <----- (    1.00000000)  T2(o1,o2,o3,c) h(o3,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,o3,c)  <--  (    1.00000000)  D2(i,o1,k,o2) T2(o1,o2,o3,c)
2: S2(i,k,a,c)  <--  (    1.00000000) X(i,k,o3,c) h(o3,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare X as a o^3 tensor
  X_(c)(i,k,o3) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * T2(o1,o2,o3,)

  S2_(c)(i,k,a) += 1.0 sum(o3) X_(c)(i,k,o3,) * h(o3,a)

  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.4
! S2(i,k,a,c)  <--
! (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) Y0(o2,c)
Case 0 ..... X(i,k,o2,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o3,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o4,o1,c)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y0(
o2,c)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o1,o3,o4,o2,a,c)  <----- (    1.00000000)  T2(o1,o3,o4,a) Y0(o2,c
)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)

! The optimal choice is .....
1: X(i,k,o2,a)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a)
2: S2(i,k,a,c)  <--  (    2.00000000) X(i,k,o2,a) Y0(o2,c)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y0 as a tensor
for c1 in {core}:
  Read V2 from GA for c1
```

```
for a in {vir}:
  Read T2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,k,o2) += 1.0 sum(o3,o4,o1) D3(i,o3,k,o2,o4,o1) * T2(o1,o3,o4,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 2 sum(o2) X_(a)(i,k,o2,) * Y0(o2,c)

    Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.5
! S2(i,k,a,c)  <--
! (    2.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c) Y1(o3,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,k,c)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,
o4,c)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,k,o2,o4,o1,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y1(
o3,a)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o1,o2,o4,o3,c,a)  <----- (    1.00000000)  T2(o1,o2,o4,c) Y1(o3,a
)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,o3,k,c)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c)
2: S2(i,k,a,c)  <--  (    2.00000000) X(i,o3,k,c) Y1(o3,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y1 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare X as a o^3 tensor
  X_(c)(i,o3,k) += 1.0 sum(o2,o4,o1) D3(i,o3,k,o2,o4,o1) * T2(o1,o2,o4,)

  S2_(c)(i,k,a) += 2 sum(o3) X_(c)(i,o3,k,) * Y1(o3,a)

  Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.6
! S2(i,k,a,c)  <--
! (    2.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) Y2(o1,c)
Case 0 ..... X(i,k,o1,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o2,o3,o1,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o2,o1,c)  <----- (    1.00000000)  D2(i,o3,k,o2) Y2(o1,c)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
```



```
Case 2 ..... X(o2,o3,a,c)  <----- (    1.00000000)  T2(o2,o3,o1,a) Y2(o1,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o1,a)  <--  (    1.00000000)  D2(i,o3,k,o2) T2(o2,o3,o1,a)
2: S2(i,k,a,c)  <--  (    2.00000000) X(i,k,o1,a) Y2(o1,c)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y2 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,k,o1) += 1.0 sum(o3,o2) D2(i,o3,k,o2) * T2(o2,o3,o1,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += 2 sum(o1) X_(a)(i,k,o1,) * Y2(o1,c)

    Accumulate S2_(c)(i,k,a) for c


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.7
! S2(i,k,a,c)  <--
! (    2.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,c) Y3(o1,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o1,c)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,c)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o2,o1,a)  <----- (    1.00000000)  D2(i,o3,k,o2) Y3(o1,a)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o3,o2,c,a)  <----- (    1.00000000)  T2(o3,o2,o1,c) Y3(o1,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,o1,c)  <--  (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,c)
2: S2(i,k,a,c)  <--  (    2.00000000) X(i,k,o1,c) Y3(o1,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y3 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare X as a o^3 tensor
  X_(c)(i,k,o1) += 1.0 sum(o3,o2) D2(i,o3,k,o2) * T2(o3,o2,o1,)

  S2_(c)(i,k,a) += 2 sum(o1) X_(c)(i,k,o1,) * Y3(o1,a)
```

```
  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.8
! S2(i,k,a,c)  <--
! (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a) Y4(o2,c)
Case 0 ..... X(i,k,o2,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o3,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o4,o1,c)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y4(
o2,c)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o1,o3,o4,o2,a,c)  <----- (    1.00000000)  T2(o1,o3,o4,a) Y4(o2,c
)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)

! The optimal choice is .....
1: X(i,k,o2,a)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o3,o4,a)
2: S2(i,k,a,c)  <--  (   -1.00000000) X(i,k,o2,a) Y4(o2,c)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y4 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,k,o2) += 1.0 sum(o3,o4,o1) D3(i,o3,k,o2,o4,o1) * T2(o1,o3,o4,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += -1 sum(o2) X_(a)(i,k,o2,) * Y4(o2,c)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.9
! S2(i,k,a,c)  <--
! (   -1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c) Y5(o3,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,k,c)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,
o4,c)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,k,o2,o4,o1,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y5(
o3,a)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o1,o2,o4,o3,c,a)  <----- (    1.00000000)  T2(o1,o2,o4,c) Y5(o3,a
)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(i,o3,k,c)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,c)
```



```
2: S2(i,k,a,c)  <--  (   -1.00000000) X(i,o3,k,c) Y5(o3,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y5 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare X as a o^3 tensor
  X_(c)(i,o3,k) += 1.0 sum(o2,o4,o1) D3(i,o3,k,o2,o4,o1) * T2(o1,o2,o4,)

  S2_(c)(i,k,a) += -1 sum(o3) X_(c)(i,o3,k,) * Y5(o3,a)

  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.10
! S2(i,k,a,c)  <--
! (   -1.00000000) D2(i,o3,k,o2) T2(o2,o3,o1,a) Y6(o1,c)
Case 0 ..... X(i,k,o1,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o2,o3,o1,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o2,o1,c)  <----- (    1.00000000)  D2(i,o3,k,o2) Y6(o1,c)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,a,c)  <----- (    1.00000000)  T2(o2,o3,o1,a) Y6(o1,c)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o1,a)  <--  (    1.00000000)  D2(i,o3,k,o2) T2(o2,o3,o1,a)
2: S2(i,k,a,c)  <--  (   -1.00000000) X(i,k,o1,a) Y6(o1,c)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y6 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,k,o1) += 1.0 sum(o3,o2) D2(i,o3,k,o2) * T2(o2,o3,o1,)

  for c in {vir}:
    Read S2 from GA for c
    S2_(c)(i,k,a) += -1 sum(o1) X_(a)(i,k,o1,) * Y6(o1,c)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.11
```

```
! S2(i,k,a,c)  <--
! (   -1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,c) Y7(o1,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o1,c)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,c)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o2,o1,a)  <----- (    1.00000000)  D2(i,o3,k,o2) Y7(o1,a)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o3,o2,c,a)  <----- (    1.00000000)  T2(o3,o2,o1,c) Y7(o1,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(i,k,o1,c)  <--  (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,c)
2: S2(i,k,a,c)  <--  (   -1.00000000) X(i,k,o1,c) Y7(o1,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y7 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for c in {vir}:
  Read T2 from GA for c
  Read S2 from GA for c
  Declare X as a o^3 tensor
  X_(c)(i,k,o1) += 1.0 sum(o3,o2) D2(i,o3,k,o2) * T2(o3,o2,o1,)

  S2_(c)(i,k,a) += -1 sum(o1) X_(c)(i,k,o1,) * Y7(o1,a)

  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.12
! S2(i,k,a,c)  <--
! (    1.00000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o2,o4,o6,a) V2(o1,o5,o3,c)
! Indices of ERI are rotated to match with LHS.
! *** D4(i,o4,k,o3,o5,o1,o6,o2) T2(o2,o4,o6,a)  is skipped due to the priority
Case 1 ..... X(i,o4,k,o6,o2,c)  <----- (    1.00000000)  D4(i,o4,k,o3,o5,o1,o6,o
2) V2(c,o3,o1,o5)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o2,o4,o6,o3,o1,o5,a,c)  <----- (    1.00000000)  T2(o2,o4,o6,a) V
2(c,o3,o1,o5)
! Polynomial order is O(o^8v^2)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,o4,k,o6,o2,c)  <--  (    1.00000000)  D4(i,o4,k,o3,o5,o1,o6,o2) V2(c,o3,o
1,o5)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o2,o4,o6,a) X(i,o4,k,o6,o2,c)

! Scaling       : O(o^8v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  for i in {occ}:
    for o4 in {occ}:
```



```
      Read D4 from GA for i, o4
      Declare X as a o^3 tensor
      X_(c,i,o4)(k,o6,o2) += 1.0 sum(o3,o1,o5) V2(,o3,o1,o5) * D4(,,k,o3,o5,o1,o
6,o2)

      for a in {vir}
        Read T2 from GA for a
        S2_(c)(i,k,a) += 1.0 sum(o2,o6) T2(o2,o4,o6,) * X_(c,i,o4)(,,k,o6,o2,)

        Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.13
! S2(i,k,a,c)  <--
! (    1.00000000) D4(i,o3,k,o4,o1,o5,o2,o6) T2(o5,o4,o1,c) V2(o2,o6,o3,a)
! Indices of BareAmp are rotated to match with LHS.
! Indices of ERI and D4 are rotated to match with each other.
H2: 0 D4: 36
*TEST* (    1.00000000) D4(o2,o6,i,o3,k,o4,o1,o5) T2(o5,o4,o1,c) V2(o2,o6,o3,a)
! *** D4(o2,o6,i,o3,k,o4,o1,o5) T2(o5,o4,o1,c)  is skipped due to the priority
Case 1 ..... X(i,k,o4,o1,o5,a)  <----- (    1.00000000)  D4(o2,o6,i,o3,k,o4,o1,o
5) V2(o2,o6,o3,a)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o5,o4,o1,o2,o6,o3,c,a)  <----- (    1.00000000)  T2(o5,o4,o1,c) V
2(o2,o6,o3,a)
! Polynomial order is O(o^8v^2)
! Maximum memory usage is O(o^4v^1)
! Case 0 is skipped due to the priority of ERI ....

! The optimal choice is .....
1: X(o5,o4,o1,o2,o6,o3,c,a)  <--  (    1.00000000)  T2(o5,o4,o1,c) V2(o2,o6,o3,a
)
2: S2(i,k,a,c)  <--  (    1.00000000) D4(o2,o6,i,o3,k,o4,o1,o5) X(o5,o4,o1,o2,o6
,o3,c,a)

! Scaling       : O(o^8v^2)
! Max size of X : o^4v^1

! * Begin scaling analysis .... *

for o2 in {occ}:
  Read V2 from GA for o2
  for o6 in {occ}:
    Read D4 from GA for o2, o6
    for c in {vir}:
      Read T2 from GA for c
      Read S2 from GA for c
      Declare X as a o^4v^1 tensor
      X_(o2,o6,c)(o5,o4,o1,o3,a) += 1.0 sum() V2(,o6,o3,a) * T2(o5,o4,o1,)

      S2_(c)(i,k,a) += 1.0 sum(o3,o4,o1,o5) D4(,,i,o3,k,o4,o1,o5) * X_(o2,o6,c)(
o5,o4,o1,,,o3,,a)

      Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.14
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o4,o1,a) V2(o1,o5,o3,c)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o4,k,o3,o5,o2) T2(o2,o4,o1,a)  is skipped due to the priority
Case 1 ..... X(i,o4,k,o2,o1,c)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(
```

```
c,o3,o1,o5)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o4,o3,o5,a,c)  <----- (    1.00000000)  T2(o2,o4,o1,a) V2(c,o3
,o1,o5)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o4,k,o2,o1,c)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(c,o3,o1,o5)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o2,o4,o1,a) X(i,o4,k,o2,o1,c)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^5 tensor
  X_(c)(i,o4,k,o2,o1) += 1.0 sum(o3,o5) V2(,o3,o1,o5) * D3(i,o4,k,o3,o5,o2)

  for a in {vir}
    Read T2 from GA for a
    S2_(c)(i,k,a) += 1.0 sum(o2,o4,o1) T2(o2,o4,o1,) * X_(c)(i,o4,k,o2,o1,)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.15
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,c) V2(o1,o5,o4,a)
! Indices of BareAmp are rotated to match with LHS.
! The indices of ERI are rotated to became virtual.
! *** D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,c)  is skipped due to the priority
Case 1 ..... X(i,k,o3,o2,o1,a)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(
a,o4,o1,o5)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,o4,o5,c,a)  <----- (    1.00000000)  T2(o2,o3,o1,c) V2(a,o4
,o1,o5)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o3,o2,o1,a)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(a,o4,o1,o5)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o2,o3,o1,c) X(i,k,o3,o2,o1,a)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Declare X as a o^5 tensor
  X_(a)(i,k,o3,o2,o1) += 1.0 sum(o4,o5) V2(,o4,o1,o5) * D3(i,o4,k,o3,o5,o2)

  for c in {vir}:
    Read S2 from GA for c
    Read T2 from GA for c
```



```
    S2_(c)(i,k,a) += 1.0 sum(o2,o3,o1) T2(o2,o3,o1,) * X_(a)(i,k,o3,o2,o1,)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.16
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o3,o4,o1,a) V2(o1,c,o2,o5)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o4,k,o3,o5,o2) T2(o3,o4,o1,a)  is skipped due to the priority
Case 1 ..... X(i,o4,k,o3,o1,c)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(
c,o1,o2,o5)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o3,o4,o2,o5,a,c)  <----- (    1.00000000)  T2(o3,o4,o1,a) V2(c,o1
,o2,o5)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o4,k,o3,o1,c)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(c,o1,o2,o5)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o3,o4,o1,a) X(i,o4,k,o3,o1,c)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^5 tensor
  X_(c)(i,o4,k,o3,o1) += 1.0 sum(o2,o5) V2(,o1,o2,o5) * D3(i,o4,k,o3,o5,o2)

  for a in {vir}
    Read T2 from GA for a
    S2_(c)(i,k,a) += 1.0 sum(o3,o4,o1) T2(o3,o4,o1,) * X_(c)(i,o4,k,o3,o1,)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.17
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,c) V2(o1,a,o2,o5)
! Indices of BareAmp are rotated to match with LHS.
! The indices of ERI are rotated to became virtual.
! *** D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,c)  is skipped due to the priority
Case 1 ..... X(i,o4,k,o3,o1,a)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(
a,o1,o2,o5)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o4,o3,o2,o5,c,a)  <----- (    1.00000000)  T2(o4,o3,o1,c) V2(a,o1
,o2,o5)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o4,k,o3,o1,a)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(a,o1,o2,o5)
2: S2(i,k,a,c)  <--  (    1.00000000) T2(o4,o3,o1,c) X(i,o4,k,o3,o1,a)
```

```
! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Declare X as a o^5 tensor
  X_(a)(i,o4,k,o3,o1) += 1.0 sum(o2,o5) V2(,o1,o2,o5) * D3(i,o4,k,o3,o5,o2)

  for c in {vir}:
    Read S2 from GA for c
    Read T2 from GA for c
    S2_(c)(i,k,a) += 1.0 sum(o4,o3,o1) T2(o4,o3,o1,) * X_(a)(i,o4,k,o3,o1,)

    Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.18
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1) V2(o2,a,c,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1)  is skipped due to the priority
Case 1 ..... X(i,k,o3,o1,o4,c,v1,a)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4
) V2(c,v1,o2,a)
! Polynomial order is O(o^6v^3)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o4,o3,o1,o2,c,a)  <----- (    1.00000000)  T2(o4,o3,o1,v1) V2(c,v
1,o2,a)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(o4,o3,o1,o2,c,a)  <--  (    1.00000000)  T2(o4,o3,o1,v1) V2(c,v1,o2,a)
2: S2(i,k,a,c)  <--  (    1.00000000) D3(i,o2,k,o3,o1,o4) X(o4,o3,o1,o2,c,a)

! Scaling       : O(o^6v^2)
! Max size of X : o^4v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^4v^1 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(c)(o4,o3,o1,o2,a) += 1.0 sum() V2(,v1,o2,a) * T2(o4,o3,o1,)

  S2_(c)(i,k,a) += 1.0 sum(o2,o3,o1,o4) D3(i,o2,k,o3,o1,o4) * X_(c)(o4,o3,o1,o2,
,a)

  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.19
! S2(i,k,a,c)  <--
! (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1) V2(o3,c,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1)  is skipped due to the priority
Case 1 ..... X(i,o2,k,o1,o4,c,a,v1)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4
) V2(c,o3,a,v1)
```



```
! Polynomial order is O(o^6v^3)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o4,o2,o1,o3,c,a)  <----- (    1.00000000)  T2(o4,o2,o1,v1) V2(c,o
3,a,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)

! The optimal choice is .....
1: X(o4,o2,o1,o3,c,a)  <--  (    1.00000000)  T2(o4,o2,o1,v1) V2(c,o3,a,v1)
2: S2(i,k,a,c)  <--  (    1.00000000) D3(i,o2,k,o3,o1,o4) X(o4,o2,o1,o3,c,a)

! Scaling       : O(o^6v^2)
! Max size of X : o^4v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^4v^1 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(c)(o4,o2,o1,o3,a) += 1.0 sum() V2(,o3,a,v1) * T2(o4,o2,o1,)

  S2_(c)(i,k,a) += 1.0 sum(o2,o3,o1,o4) D3(i,o2,k,o3,o1,o4) * X_(c)(o4,o2,o1,o3,
,a)

  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.20
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,v1) V2(o3,a,c,v1)
! Indices of ERI are rotated to match with LHS.
! *** D2(i,o1,k,o2) T2(o1,o2,o3,v1)  is skipped due to the priority
Case 1 ..... X(i,o1,k,o2,o3,c,v1,a)  <----- (    1.00000000)  D2(i,o1,k,o2) V2(c
,v1,o3,a)
! Polynomial order is O(o^5v^3)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o1,o2,c,a)  <----- (    1.00000000)  T2(o1,o2,o3,v1) V2(c,v1,o3,a
)
! Polynomial order is O(o^3v^3)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(o1,o2,c,a)  <--  (    1.00000000)  T2(o1,o2,o3,v1) V2(c,v1,o3,a)
2: S2(i,k,a,c)  <--  (    1.00000000) D2(i,o1,k,o2) X(o1,o2,c,a)

! Scaling       : O(o^3v^3)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^2v^1 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(c)(o1,o2,a) += 1.0 sum(o3) V2(,v1,o3,a) * T2(o1,o2,o3,)

  S2_(c)(i,k,a) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * X_(c)(o1,o2,,a)

  Accumulate S2_(c)(i,k,a) for c
```

```
! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.21
! S2(i,k,a,c)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,o3,v1) V2(o3,c,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D2(i,o1,k,o2) T2(o2,o1,o3,v1)  is skipped due to the priority
Case 1 ..... X(i,o1,k,o2,o3,c,a,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) V2(c
,o3,a,v1)
! Polynomial order is O(o^5v^3)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o2,o1,c,a)  <----- (    1.00000000)  T2(o2,o1,o3,v1) V2(c,o3,a,v1
)
! Polynomial order is O(o^3v^3)
! Maximum memory usage is O(o^2v^1)

! The optimal choice is .....
1: X(o2,o1,c,a)  <--  (    1.00000000)  T2(o2,o1,o3,v1) V2(c,o3,a,v1)
2: S2(i,k,a,c)  <--  (    1.00000000) D2(i,o1,k,o2) X(o2,o1,c,a)

! Scaling       : O(o^3v^3)
! Max size of X : o^2v^1

! * Begin scaling analysis .... *

for c in {vir}:
  Read V2 from GA for c
  Read S2 from GA for c
  Declare X as a o^2v^1 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(c)(o2,o1,a) += 1.0 sum(o3) V2(,o3,a,v1) * T2(o2,o1,o3,)

  S2_(c)(i,k,a) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * X_(c)(o2,o1,,a)

  Accumulate S2_(c)(i,k,a) for c


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

* 3 <ooov/oovv>

(    0.50000000) T2(o1,o2,v1,a) V2(c1,o3,c2,v1) E4(c1,i,k,o3,c2,m,o2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,m,c2,v1) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,o3,c2,v1) E4(c1,i,k,o3,c2,m,o1,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,m,c2,v1) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,c2,v1,o3) E4(c1,i,k,o3,o1,m,o2,c2)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,c2,v1,m) E3(c1,i,k,o1,c2,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,c2,v1,o3) E4(c1,i,k,o3,o2,m,o1,c2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,c2,v1,m) E3(c1,i,k,o2,c2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,c2,v1,o3) E4(c1,i,k,o3,o1,m,o2,c2)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,c2,v1,m) E3(c1,i,k,o1,c2,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,c2,v1,o3) E4(c1,i,k,o3,o2,m,o1,c2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,c2,v1,m) E3(c1,i,k,o2,c2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,o3,c2,v1) E4(c1,i,k,o3,c2,m,o2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(c1,m,c2,v1) E3(c1,i,k,c2,o1,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,o3,c2,v1) E4(c1,i,k,o3,c2,m,o1,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(c1,m,c2,v1) E3(c1,i,k,c2,o2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(o3,o4,o5,v1) E4(i,k,o3,o4,m,o2,o5,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(m,o3,o4,v1) E3(i,k,o3,o4,o2,o1)
(    0.50000000) T2(o1,o2,v1,a) V2(m,o3,v1,o4) E3(i,k,o3,o1,o2,o4)
(    0.50000000) T2(o1,o2,a,v1) V2(o3,o4,o5,v1) E4(i,k,o3,o4,m,o1,o5,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(m,o3,o4,v1) E3(i,k,o3,o4,o1,o2)
(    0.50000000) T2(o1,o2,a,v1) V2(m,o3,v1,o4) E3(i,k,o3,o2,o1,o4)
(    0.50000000) T2(o1,o2,v1,a) V2(o3,o4,v1,o5) E4(i,k,o3,o4,m,o2,o1,o5)
(    0.50000000) T2(o1,o2,v1,a) V2(m,o3,v1,o4) E3(i,k,o3,o1,o2,o4)
(    0.50000000) T2(o1,o2,v1,a) V2(m,o3,o4,v1) E3(i,k,o3,o4,o2,o1)
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(    0.50000000) T2(o1,o2,a,v1) V2(o3,o4,v1,o5) E4(i,k,o3,o4,m,o1,o2,o5)
(    0.50000000) T2(o1,o2,a,v1) V2(m,o3,v1,o4) E3(i,k,o3,o2,o1,o4)
(    0.50000000) T2(o1,o2,a,v1) V2(m,o3,o4,v1) E3(i,k,o3,o4,o1,o2)
(    0.50000000) T2(o1,o2,v1,v2) V2(o3,a,v1,v2) E3(i,k,o3,m,o2,o1)
(    0.50000000) T2(o1,o2,v1,v2) V2(m,a,v1,v2) E2(i,k,o1,o2)
(    0.50000000) T2(o1,o2,v1,v2) V2(o3,a,v2,v1) E3(i,k,o3,m,o1,o2)
(    0.50000000) T2(o1,o2,v1,v2) V2(m,a,v2,v1) E2(i,k,o2,o1)
(    0.50000000) T2(o1,o2,v1,v2) V2(o3,a,v1,v2) E3(i,k,o3,m,o2,o1)
(    0.50000000) T2(o1,o2,v1,v2) V2(m,a,v1,v2) E2(i,k,o1,o2)
(    0.50000000) T2(o1,o2,v1,v2) V2(o3,a,v2,v1) E3(i,k,o3,m,o1,o2)
(    0.50000000) T2(o1,o2,v1,v2) V2(m,a,v2,v1) E2(i,k,o2,o1)

Decompose RDMs .....


< RESULT >
    0 : (    1.00000000) D3(i,k,o3,m,o2,o1) T2(o1,o2,v1,a) h(o3,v1)
    1 : (    1.00000000) D2(i,k,o2,o1) T2(o2,o1,v1,a) h(m,v1)
    2 : (    1.00000000) D3(i,k,o1,m,o2,o3) T2(o2,o3,a,v1) h(o1,v1)
    3 : (    1.00000000) D2(i,k,o1,o2) T2(o2,o1,a,v1) h(m,v1)
    4 : (    2.00000000) D3(i,k,o3,m,o2,o1) T2(o1,o2,v1,a) V2(c1,o3,c1,v1)
    5 : (    2.00000000) D2(i,k,o2,o1) T2(o2,o1,v1,a) V2(c1,m,c1,v1)
    6 : (    2.00000000) D3(i,k,o3,m,o2,o1) T2(o2,o1,a,v1) V2(c1,o3,c1,v1)
    7 : (    2.00000000) D2(i,k,o2,o1) T2(o1,o2,a,v1) V2(c1,m,c1,v1)
    8 : (   -1.00000000) D3(i,k,o3,m,o2,o1) T2(o1,o2,v1,a) V2(c1,c1,o3,v1)
    9 : (   -1.00000000) D2(i,k,o2,o1) T2(o2,o1,v1,a) V2(c1,c1,m,v1)
   10 : (   -1.00000000) D3(i,k,o3,m,o2,o1) T2(o2,o1,a,v1) V2(c1,c1,o3,v1)
   11 : (   -1.00000000) D2(i,k,o2,o1) T2(o1,o2,a,v1) V2(c1,c1,m,v1)
   12 : (    1.00000000) D4(i,k,o5,o4,m,o3,o2,o1) T2(o1,o3,v1,a) V2(o5,o4,o2,v1)

   13 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o1,o2,v1,a) V2(m,o4,o3,v1)
   14 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o3,o2,v1,a) V2(m,o4,v1,o1)
   15 : (    1.00000000) D4(i,k,o2,o1,m,o3,o5,o4) T2(o3,o4,a,v1) V2(o2,o1,o5,v1)

   16 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o2,o1,a,v1) V2(m,o4,o3,v1)
   17 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o2,o3,a,v1) V2(m,o4,v1,o1)
   18 : (    1.00000000) D3(i,k,o3,m,o2,o1) T2(o1,o2,v2,v1) V2(o3,a,v2,v1)
   19 : (    1.00000000) D2(i,k,o2,o1) T2(o2,o1,v2,v1) V2(m,a,v2,v1)
   20 : (    1.00000000) D3(i,k,o1,m,o2,o3) T2(o2,o3,v1,v2) V2(o1,a,v2,v1)
   21 : (    1.00000000) D2(i,k,o1,o2) T2(o2,o1,v1,v2) V2(m,a,v2,v1)


< RESULT2 >
    0 : (    1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) h(o3,v1)
    1 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) h(m,v1)
    2 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,a,v1) h(o1,v1)
    3 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,a,v1) h(m,v1)
    4 : (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) V2(c1,c1,o3,v1)
    5 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) V2(c1,c1,m,v1)
    6 : (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o2,o1,a,v1) V2(c1,c1,o3,v1)
    7 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,a,v1) V2(c1,c1,m,v1)
    8 : (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) V2(c1,o3,c1,v1)
    9 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) V2(c1,m,c1,v1)
   10 : (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o2,o1,a,v1) V2(c1,o3,c1,v1)
   11 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,a,v1) V2(c1,m,c1,v1)
   12 : (    1.00000000) D4(i,m,k,o3,o4,o1,o5,o2) T2(o1,o3,v1,a) V2(o2,o5,o4,v1)

   13 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,a) V2(m,o3,o4,v1)
   14 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,a) V2(m,v1,o1,o4)
   15 : (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o3,o4,a,v1) V2(o1,v1,o2,o5)

   16 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o1,a,v1) V2(m,o3,o4,v1)
   17 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,a,v1) V2(m,v1,o1,o4)
   18 : (    1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v2,v1) V2(o3,v2,a,v1)
   19 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v2,v1) V2(m,v2,a,v1)
   20 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,v1,v2) V2(o1,v2,a,v1)
   21 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,v1,v2) V2(m,v2,a,v1)

< RESULT >
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    0 : (    1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) h(o3,v1)
    1 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) h(m,v1)
    2 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,a,v1) h(o1,v1)
    3 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,a,v1) h(m,v1)
    4 : (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) V2(c1,c1,o3,v1)
    5 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) V2(c1,c1,m,v1)
    6 : (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o2,o1,a,v1) V2(c1,c1,o3,v1)
    7 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,a,v1) V2(c1,c1,m,v1)
    8 : (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) V2(c1,o3,c1,v1)
    9 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) V2(c1,m,c1,v1)
   10 : (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o2,o1,a,v1) V2(c1,o3,c1,v1)
   11 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,a,v1) V2(c1,m,c1,v1)
   12 : (    1.00000000) D4(i,m,k,o3,o4,o1,o5,o2) T2(o1,o3,v1,a) V2(o2,o5,o4,v1)

   13 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,a) V2(m,o3,o4,v1)
   14 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,a) V2(m,v1,o1,o4)
   15 : (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o3,o4,a,v1) V2(o1,v1,o2,o5)

   16 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o1,a,v1) V2(m,o3,o4,v1)
   17 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,a,v1) V2(m,v1,o1,o4)
   18 : (    1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v2,v1) V2(o3,v2,a,v1)
   19 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v2,v1) V2(m,v2,a,v1)
   20 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,v1,v2) V2(o1,v2,a,v1)
   21 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,v1,v2) V2(m,v2,a,v1)
Setting up parameters as default ....

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! * 8 terms are replaced in the linking process ....


The linked formulas ....
0 : (    1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) h(o3,v1)
1 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) h(m,v1)
2 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,a,v1) h(o1,v1)
3 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,a,v1) h(m,v1)
4 : (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) Y0(o3,v1)
5 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) Y1(m,v1)
6 : (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o2,o1,a,v1) Y2(o3,v1)
7 : (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,a,v1) Y3(m,v1)
8 : (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) Y4(o3,v1)
9 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) Y5(m,v1)
10 : (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o2,o1,a,v1) Y6(o3,v1)
11 : (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,a,v1) Y7(m,v1)
12 : (    1.00000000) D4(i,m,k,o3,o4,o1,o5,o2) T2(o1,o3,v1,a) V2(o2,o5,o4,v1)
13 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,a) V2(m,o3,o4,v1)
14 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,a) V2(m,v1,o1,o4)
15 : (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o3,o4,a,v1) V2(o1,v1,o2,o5)
16 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o1,a,v1) V2(m,o3,o4,v1)
17 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,a,v1) V2(m,v1,o1,o4)
18 : (    1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v2,v1) V2(o3,v2,a,v1)
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19 : (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v2,v1) V2(m,v2,a,v1)
20 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,v1,v2) V2(o1,v2,a,v1)
21 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,v1,v2) V2(m,v2,a,v1)

The content of each effective tensor ....
Y0 <-- (    1.00000000)  V2(c1,c1,o3,v1)
Y1 <-- (    1.00000000)  V2(c1,c1,m,v1)
Y2 <-- (    1.00000000)  V2(c1,c1,o3,v1)
Y3 <-- (    1.00000000)  V2(c1,c1,m,v1)
Y4 <-- (    1.00000000)  V2(c1,o3,c1,v1)
Y5 <-- (    1.00000000)  V2(c1,m,c1,v1)
Y6 <-- (    1.00000000)  V2(c1,o3,c1,v1)
Y7 <-- (    1.00000000)  V2(c1,m,c1,v1)


! No.0
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) h(o3,v1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o3,v1,a)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) T2(o1
,o2,v1,a)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 1 ..... X(i,m,k,o2,o1,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) h(o3
,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o1,o2,o3,a)  <----- (    1.00000000)  T2(o1,o2,v1,a) h(o3,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o1,o2,o3,a)  <--  (    1.00000000)  T2(o1,o2,v1,a) h(o3,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,m,k,o2,o3,o1) X(o1,o2,o3,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(o1,o2,o3) += 1.0 sum(v1) T2(o1,o2,v1,) * h(o3,v1)

  S2_(a)(i,k,m) += 1.0 sum(o2,o3,o1) D3(i,m,k,o2,o3,o1) * X_(a)(o1,o2,o3,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.1
! S2(i,k,m,a)  <--
! (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) h(m,v1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,v1,a)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,v1,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,m,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) h(m,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o2,o1,m,a)  <----- (    1.00000000)  T2(o2,o1,v1,a) h(m,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
```

```
1: X(o2,o1,m,a)  <--  (    1.00000000)  T2(o2,o1,v1,a) h(m,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D2(i,o2,k,o1) X(o2,o1,m,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(o2,o1,m) += 1.0 sum(v1) T2(o2,o1,v1,) * h(m,v1)

  S2_(a)(i,k,m) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * X_(a)(o2,o1,m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.2
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,a,v1) h(o1,v1)
Case 0 ..... X(i,m,k,o1,a,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3) T2(o2
,o3,a,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 1 ..... X(i,m,k,o2,o3,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3) h(o1
,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,o1,a)  <----- (    1.00000000)  T2(o2,o3,a,v1) h(o1,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o3,o1,a)  <--  (    1.00000000)  T2(o2,o3,a,v1) h(o1,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,m,k,o2,o1,o3) X(o2,o3,o1,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o2,o3,o1) += 1.0 sum() T2(o2,o3,a,) * h(o1,v1)

  S2_(a)(i,k,m) += 1.0 sum(o2,o1,o3) D3(i,m,k,o2,o1,o3) * X_(a)(o2,o3,o1,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.3
! S2(i,k,m,a)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,a,v1) h(m,v1)
Case 0 ..... X(i,k,a,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) T2(o2,o1,a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Case 1 ..... X(i,o1,k,o2,m,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) h(m,v1)
! Polynomial order is O(o^5v^2)
```



```
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o1,m,a)  <----- (    1.00000000)  T2(o2,o1,a,v1) h(m,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(o2,o1,m,a)  <--  (    1.00000000)  T2(o2,o1,a,v1) h(m,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D2(i,o1,k,o2) X(o2,o1,m,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o2,o1,m) += 1.0 sum() T2(o2,o1,a,) * h(m,v1)

  S2_(a)(i,k,m) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * X_(a)(o2,o1,m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.4
! S2(i,k,m,a)  <--
! (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) Y0(o3,v1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o3,v1,a)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) T2(o1
,o2,v1,a)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 1 ..... X(i,m,k,o2,o1,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) Y0(o
3,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o1,o2,o3,a)  <----- (    1.00000000)  T2(o1,o2,v1,a) Y0(o3,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o1,o2,o3,a)  <--  (    1.00000000)  T2(o1,o2,v1,a) Y0(o3,v1)
2: S2(i,k,m,a)  <--  (    2.00000000) D3(i,m,k,o2,o3,o1) X(o1,o2,o3,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y0 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(o1,o2,o3) += 1.0 sum(v1) T2(o1,o2,v1,) * Y0(o3,v1)

  S2_(a)(i,k,m) += 2 sum(o2,o3,o1) D3(i,m,k,o2,o3,o1) * X_(a)(o1,o2,o3,)

  Accumulate S2_(a)(i,k,m) for a
```

```
! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.5
! S2(i,k,m,a)  <--
! (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) Y1(m,v1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,v1,a)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,v1,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,m,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y1(m,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o2,o1,m,a)  <----- (    1.00000000)  T2(o2,o1,v1,a) Y1(m,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o1,m,a)  <--  (    1.00000000)  T2(o2,o1,v1,a) Y1(m,v1)
2: S2(i,k,m,a)  <--  (    2.00000000) D2(i,o2,k,o1) X(o2,o1,m,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y1 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(o2,o1,m) += 1.0 sum(v1) T2(o2,o1,v1,) * Y1(m,v1)

  S2_(a)(i,k,m) += 2 sum(o2,o1) D2(i,o2,k,o1) * X_(a)(o2,o1,m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.6
! S2(i,k,m,a)  <--
! (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o2,o1,a,v1) Y2(o3,v1)
Case 0 ..... X(i,m,k,o3,a,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) T2(o2
,o1,a,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 1 ..... X(i,m,k,o2,o1,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) Y2(o
3,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o1,o3,a)  <----- (    1.00000000)  T2(o2,o1,a,v1) Y2(o3,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o1,o3,a)  <--  (    1.00000000)  T2(o2,o1,a,v1) Y2(o3,v1)
2: S2(i,k,m,a)  <--  (    2.00000000) D3(i,m,k,o2,o3,o1) X(o2,o1,o3,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *
```



```
Declare Y2 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o2,o1,o3) += 1.0 sum() T2(o2,o1,a,) * Y2(o3,v1)

  S2_(a)(i,k,m) += 2 sum(o2,o3,o1) D3(i,m,k,o2,o3,o1) * X_(a)(o2,o1,o3,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.7
! S2(i,k,m,a)  <--
! (    2.00000000) D2(i,o2,k,o1) T2(o1,o2,a,v1) Y3(m,v1)
Case 0 ..... X(i,k,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Case 1 ..... X(i,o2,k,o1,m,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y3(m,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o1,o2,m,a)  <----- (    1.00000000)  T2(o1,o2,a,v1) Y3(m,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(o1,o2,m,a)  <--  (    1.00000000)  T2(o1,o2,a,v1) Y3(m,v1)
2: S2(i,k,m,a)  <--  (    2.00000000) D2(i,o2,k,o1) X(o1,o2,m,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y3 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o1,o2,m) += 1.0 sum() T2(o1,o2,a,) * Y3(m,v1)

  S2_(a)(i,k,m) += 2 sum(o2,o1) D2(i,o2,k,o1) * X_(a)(o1,o2,m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.8
! S2(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v1,a) Y4(o3,v1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o3,v1,a)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) T2(o1
,o2,v1,a)
```

```
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4v^1)
Case 1 ..... X(i,m,k,o2,o1,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) Y4(o
3,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o1,o2,o3,a)  <----- (    1.00000000)  T2(o1,o2,v1,a) Y4(o3,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o1,o2,o3,a)  <--  (    1.00000000)  T2(o1,o2,v1,a) Y4(o3,v1)
2: S2(i,k,m,a)  <--  (   -1.00000000) D3(i,m,k,o2,o3,o1) X(o1,o2,o3,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y4 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(o1,o2,o3) += 1.0 sum(v1) T2(o1,o2,v1,) * Y4(o3,v1)

  S2_(a)(i,k,m) += -1 sum(o2,o3,o1) D3(i,m,k,o2,o3,o1) * X_(a)(o1,o2,o3,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.9
! S2(i,k,m,a)  <--
! (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,v1,a) Y5(m,v1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,v1,a)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,v1,a)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2v^1)
Case 1 ..... X(i,o2,k,o1,m,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y5(m,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o2,o1,m,a)  <----- (    1.00000000)  T2(o2,o1,v1,a) Y5(m,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o1,m,a)  <--  (    1.00000000)  T2(o2,o1,v1,a) Y5(m,v1)
2: S2(i,k,m,a)  <--  (   -1.00000000) D2(i,o2,k,o1) X(o2,o1,m,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y5 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(o2,o1,m) += 1.0 sum(v1) T2(o2,o1,v1,) * Y5(m,v1)
```



```
  S2_(a)(i,k,m) += -1 sum(o2,o1) D2(i,o2,k,o1) * X_(a)(o2,o1,m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.10
! S2(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o2,o1,a,v1) Y6(o3,v1)
Case 0 ..... X(i,m,k,o3,a,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) T2(o2
,o1,a,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 1 ..... X(i,m,k,o2,o1,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) Y6(o
3,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o1,o3,a)  <----- (    1.00000000)  T2(o2,o1,a,v1) Y6(o3,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o1,o3,a)  <--  (    1.00000000)  T2(o2,o1,a,v1) Y6(o3,v1)
2: S2(i,k,m,a)  <--  (   -1.00000000) D3(i,m,k,o2,o3,o1) X(o2,o1,o3,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y6 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o2,o1,o3) += 1.0 sum() T2(o2,o1,a,) * Y6(o3,v1)

  S2_(a)(i,k,m) += -1 sum(o2,o3,o1) D3(i,m,k,o2,o3,o1) * X_(a)(o2,o1,o3,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.11
! S2(i,k,m,a)  <--
! (   -1.00000000) D2(i,o2,k,o1) T2(o1,o2,a,v1) Y7(m,v1)
Case 0 ..... X(i,k,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o1,o2,a,v1)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^2)
Case 1 ..... X(i,o2,k,o1,m,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y7(m,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o1,o2,m,a)  <----- (    1.00000000)  T2(o1,o2,a,v1) Y7(m,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(o1,o2,m,a)  <--  (    1.00000000)  T2(o1,o2,a,v1) Y7(m,v1)
```

```
2: S2(i,k,m,a)  <--  (   -1.00000000) D2(i,o2,k,o1) X(o1,o2,m,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y7 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o1,o2,m) += 1.0 sum() T2(o1,o2,a,) * Y7(m,v1)

  S2_(a)(i,k,m) += -1 sum(o2,o1) D2(i,o2,k,o1) * X_(a)(o1,o2,m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.12
! S2(i,k,m,a)  <--
! (    1.00000000) D4(i,m,k,o3,o4,o1,o5,o2) T2(o1,o3,v1,a) V2(o2,o5,o4,v1)
! Indices of BareAmp are rotated to match with LHS.
! Indices of ERI and D4 are rotated to match with each other.
H2: 0 D4: 37
*TEST* (    1.00000000) D4(o2,o5,m,i,o3,k,o1,o4) T2(o1,o3,v1,a) V2(o2,o5,o4,v1)
! *** D4(o2,o5,m,i,o3,k,o1,o4) T2(o1,o3,v1,a)  is skipped due to the priority
Case 1 ..... X(m,i,o3,k,o1,v1)  <----- (    1.00000000)  D4(o2,o5,m,i,o3,k,o1,o4
) V2(o2,o5,o4,v1)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o1,o3,o2,o5,o4,a)  <----- (    1.00000000)  T2(o1,o3,v1,a) V2(o2,
o5,o4,v1)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^3)
! Case 0 is skipped due to the priority of ERI ....

! The optimal choice is .....
1: X(o1,o3,o2,o5,o4,a)  <--  (    1.00000000)  T2(o1,o3,v1,a) V2(o2,o5,o4,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D4(o2,o5,m,i,o3,k,o1,o4) X(o1,o3,o2,o5,o4,
a)

! Scaling       : O(o^8v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for o2 in {occ}:
  Read V2 from GA for o2
  for o5 in {occ}:
    Read D4 from GA for o2, o5
    for a in {vir}:
      Read T2 from GA for a
      Read S2 from GA for a
      Declare X as a o^3 tensor
      X_(o2,o5,a)(o1,o3,o4) += 1.0 sum(v1) V2(,o5,o4,v1) * T2(o1,o3,v1,)

      S2_(a)(i,k,m) += 1.0 sum(o3,o1,o4) D4(,,m,i,o3,k,o1,o4) * X_(o2,o5,a)(o1,o
3,,,o4,)

      Accumulate S2_(a)(i,k,m) for a
```



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! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.13
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,a) V2(m,o3,o4,v1)
! Indices of BareAmp are rotated to match with LHS.
! The indices of ERI are rotated to became virtual.
! *** D3(i,o3,k,o2,o4,o1) T2(o1,o2,v1,a)  is skipped due to the priority
Case 1 ..... X(i,k,o2,o1,m,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
v1,o4,m,o3)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o1,o2,o4,m,o3,a)  <----- (    1.00000000)  T2(o1,o2,v1,a) V2(v1,o
4,m,o3)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,k,o2,o1,m,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(v1,o4,m,o3)
2: S2(i,k,m,a)  <--  (    1.00000000) T2(o1,o2,v1,a) X(i,k,o2,o1,m,v1)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read V2 from GA for v1
  Declare X as a o^5 tensor
  X_(v1)(i,k,o2,o1,m) += 1.0 sum(o4,o3) V2(,o4,m,o3) * D3(i,o3,k,o2,o4,o1)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += 1.0 sum(o1,o2) T2(o1,o2,v1,) * X_(v1)(i,k,o2,o1,m,)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.14
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,a) V2(m,v1,o1,o4)
! Indices of BareAmp are rotated to match with LHS.
! The indices of ERI are rotated to became virtual.
! *** D3(i,o3,k,o2,o4,o1) T2(o3,o2,v1,a)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o2,m,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
v1,m,o1,o4)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o3,o2,m,o1,o4,a)  <----- (    1.00000000)  T2(o3,o2,v1,a) V2(v1,m
,o1,o4)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,o3,k,o2,m,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(v1,m,o1,o4)
2: S2(i,k,m,a)  <--  (    1.00000000) T2(o3,o2,v1,a) X(i,o3,k,o2,m,v1)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for v1 in {vir}:
```

```
  Read V2 from GA for v1
  Declare X as a o^5 tensor
  X_(v1)(i,o3,k,o2,m) += 1.0 sum(o1,o4) V2(,m,o1,o4) * D3(i,o3,k,o2,o4,o1)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += 1.0 sum(o3,o2) T2(o3,o2,v1,) * X_(v1)(i,o3,k,o2,m,)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.15
! S2(i,k,m,a)  <--
! (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o3,o4,a,v1) V2(o1,v1,o2,o5)
! Indices of ERI are rotated to match with Bareamp.
! *** D4(i,m,k,o3,o1,o4,o2,o5) T2(o3,o4,a,v1)  is skipped due to the priority
Case 1 ..... X(i,m,k,o3,o4,v1)  <----- (    1.00000000)  D4(i,m,k,o3,o1,o4,o2,o5
) V2(v1,o1,o2,o5)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o3,o4,o1,o2,o5,a)  <----- (    1.00000000)  T2(o3,o4,a,v1) V2(v1,
o1,o2,o5)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,m,k,o3,o4,v1)  <--  (    1.00000000)  D4(i,m,k,o3,o1,o4,o2,o5) V2(v1,o1,o
2,o5)
2: S2(i,k,m,a)  <--  (    1.00000000) T2(o3,o4,a,v1) X(i,m,k,o3,o4,v1)

! Scaling       : O(o^8v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read V2 from GA for v1
  Read T2 from GA for v1
  for i in {occ}:
    for m in {occ}:
      Read D4 from GA for i, m
      Declare X as a o^3 tensor
      X_(v1,i,m)(k,o3,o4) += 1.0 sum(o1,o2,o5) V2(,o1,o2,o5) * D4(,,k,o3,o1,o4,o
2,o5)

      for a in {vir}:
        Read S2 from GA for a
        S2_(a)(i,k,m) += 1.0 sum(o3,o4) T2(o3,o4,a,) * X_(v1,i,m)(,,k,o3,o4,)

        Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.16
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o1,a,v1) V2(m,o3,o4,v1)
! Indices of ERI are rotated to match with Bareamp.
! *** D3(i,o3,k,o2,o4,o1) T2(o2,o1,a,v1)  is skipped due to the priority
Case 1 ..... X(i,k,o2,o1,m,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
v1,o4,m,o3)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o1,o4,m,o3,a)  <----- (    1.00000000)  T2(o2,o1,a,v1) V2(v1,o
```



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4,m,o3)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,k,o2,o1,m,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(v1,o4,m,o3)
2: S2(i,k,m,a)  <--  (    1.00000000) T2(o2,o1,a,v1) X(i,k,o2,o1,m,v1)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read V2 from GA for v1
  Read T2 from GA for v1
  Declare X as a o^5 tensor
  X_(v1)(i,k,o2,o1,m) += 1.0 sum(o4,o3) V2(,o4,m,o3) * D3(i,o3,k,o2,o4,o1)

  for a in {vir}:
    Read S2 from GA for a
    S2_(a)(i,k,m) += 1.0 sum(o2,o1) T2(o2,o1,a,) * X_(v1)(i,k,o2,o1,m,)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.17
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o2,o3,a,v1) V2(m,v1,o1,o4)
! Indices of ERI are rotated to match with Bareamp.
! *** D3(i,o3,k,o2,o4,o1) T2(o2,o3,a,v1)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o2,m,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
v1,m,o1,o4)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,m,o1,o4,a)  <----- (    1.00000000)  T2(o2,o3,a,v1) V2(v1,m
,o1,o4)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,o3,k,o2,m,v1)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(v1,m,o1,o4)
2: S2(i,k,m,a)  <--  (    1.00000000) T2(o2,o3,a,v1) X(i,o3,k,o2,m,v1)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read V2 from GA for v1
  Read T2 from GA for v1
  Declare X as a o^5 tensor
  X_(v1)(i,o3,k,o2,m) += 1.0 sum(o1,o4) V2(,m,o1,o4) * D3(i,o3,k,o2,o4,o1)

  for a in {vir}:
    Read S2 from GA for a
    S2_(a)(i,k,m) += 1.0 sum(o2,o3) T2(o2,o3,a,) * X_(v1)(i,o3,k,o2,m,)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.18
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```
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,v2,v1) V2(o3,v2,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,m,k,o2,o3,o1) T2(o1,o2,v2,v1)  is skipped due to the priority
Case 1 ..... X(i,m,k,o2,o1,a,v1,v2)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1)
 V2(a,v1,o3,v2)
! Polynomial order is O(o^6v^3)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o1,o2,o3,a)  <----- (    1.00000000)  T2(o1,o2,v2,v1) V2(a,v1,o3,
v2)
! Polynomial order is O(o^3v^3)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o1,o2,o3,a)  <--  (    1.00000000)  T2(o1,o2,v2,v1) V2(a,v1,o3,v2)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,m,k,o2,o3,o1) X(o1,o2,o3,a)

! Scaling       : O(o^3v^3)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o1,o2,o3) += 1.0 sum(v2) V2(,v1,o3,v2) * T2(o1,o2,v2,)

  S2_(a)(i,k,m) += 1.0 sum(o2,o3,o1) D3(i,m,k,o2,o3,o1) * X_(a)(o1,o2,o3,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.19
! S2(i,k,m,a)  <--
! (    1.00000000) D2(i,o2,k,o1) T2(o2,o1,v2,v1) V2(m,v2,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D2(i,o2,k,o1) T2(o2,o1,v2,v1)  is skipped due to the priority
Case 1 ..... X(i,o2,k,o1,m,a,v1,v2)  <----- (    1.00000000)  D2(i,o2,k,o1) V2(a
,v1,m,v2)
! Polynomial order is O(o^5v^3)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o2,o1,m,a)  <----- (    1.00000000)  T2(o2,o1,v2,v1) V2(a,v1,m,v2
)
! Polynomial order is O(o^3v^3)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o1,m,a)  <--  (    1.00000000)  T2(o2,o1,v2,v1) V2(a,v1,m,v2)
2: S2(i,k,m,a)  <--  (    1.00000000) D2(i,o2,k,o1) X(o2,o1,m,a)

! Scaling       : O(o^3v^3)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o2,o1,m) += 1.0 sum(v2) V2(,v1,m,v2) * T2(o2,o1,v2,)
```



```
  S2_(a)(i,k,m) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * X_(a)(o2,o1,m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.20
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,v1,v2) V2(o1,v2,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,m,k,o2,o1,o3) T2(o2,o3,v1,v2)  is skipped due to the priority
Case 1 ..... X(i,m,k,o2,o3,a,v1,v2)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3)
 V2(a,v1,o1,v2)
! Polynomial order is O(o^6v^3)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o2,o3,o1,a)  <----- (    1.00000000)  T2(o2,o3,v1,v2) V2(a,v1,o1,
v2)
! Polynomial order is O(o^3v^3)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o3,o1,a)  <--  (    1.00000000)  T2(o2,o3,v1,v2) V2(a,v1,o1,v2)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,m,k,o2,o1,o3) X(o2,o3,o1,a)

! Scaling       : O(o^3v^3)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v2 in {vir}:
    Read T2 from GA for v2
    X_(a)(o2,o3,o1) += 1.0 sum(v1) V2(,v1,o1,v2) * T2(o2,o3,v1,)

  S2_(a)(i,k,m) += 1.0 sum(o2,o1,o3) D3(i,m,k,o2,o1,o3) * X_(a)(o2,o3,o1,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.21
! S2(i,k,m,a)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,v1,v2) V2(m,v2,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D2(i,o1,k,o2) T2(o2,o1,v1,v2)  is skipped due to the priority
Case 1 ..... X(i,o1,k,o2,m,a,v1,v2)  <----- (    1.00000000)  D2(i,o1,k,o2) V2(a
,v1,m,v2)
! Polynomial order is O(o^5v^3)
! Maximum memory usage is O(o^5v^1)
Case 2 ..... X(o2,o1,m,a)  <----- (    1.00000000)  T2(o2,o1,v1,v2) V2(a,v1,m,v2
)
! Polynomial order is O(o^3v^3)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o1,m,a)  <--  (    1.00000000)  T2(o2,o1,v1,v2) V2(a,v1,m,v2)
2: S2(i,k,m,a)  <--  (    1.00000000) D2(i,o1,k,o2) X(o2,o1,m,a)

! Scaling       : O(o^3v^3)
! Max size of X : o^3

! * Begin scaling analysis .... *
```

```
for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v2 in {vir}:
    Read T2 from GA for v2
    X_(a)(o2,o1,m) += 1.0 sum(v1) V2(,v1,m,v2) * T2(o2,o1,v1,)

  S2_(a)(i,k,m) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * X_(a)(o2,o1,m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

* 4 <ooov/ooov>

(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,c3,c4) E5(c1,c2,i,k,o3,c3,c4,m,o2,o1)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,c3,c4) E4(c1,c2,i,k,c3,c4,o1,o2)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,c3,c4) E5(c1,c2,i,k,o3,c3,c4,m,o2,o1)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,c2,c3,c4) E4(c1,c2,i,k,c3,c4,o1,o2)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,c3,c4) E5(c1,c2,m,o1,o2,c3,c4,i,o3,k)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,c2,c3,c4) E4(c1,c2,o1,o2,c3,c4,i,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,c3,c4) E5(c1,c2,m,o1,o2,c3,c4,i,o3,k)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,c3,c4) E4(c1,c2,o1,o2,c3,c4,i,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,i,k,o3,o4,c2,m,o2,o1,o5)
(    0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,i,k,o3,c2,o1,o2,o4)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o4) E4(c1,i,k,o3,c2,o4,o2,o1)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,o3,c2,o4) E4(c1,i,k,o4,c2,m,o2,o1)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o3) E3(c1,i,k,c2,o1,o2)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,i,k,o3,o4,c2,m,o2,o1,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,i,k,o3,c2,o1,o2,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o4) E4(c1,i,k,o3,c2,o4,o2,o1)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o1,c2,o4) E4(c1,i,k,o3,c2,m,o2,o4)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,o1,c2,o3) E3(c1,i,k,c2,o3,o2)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o2,c2,o4) E4(c1,i,k,o3,c2,m,o4,o1)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,o2,c2,o3) E3(c1,i,k,c2,o1,o3)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,m,o1,o2,o4,c2,i,o3,k,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,o1,o2,o3,c2,i,k,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o3,c2,o4) E4(c1,m,o1,o2,c2,i,o4,k)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,i,c2,o4) E4(c1,m,o1,o2,c2,o4,o3,k)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,i,c2,o3) E3(c1,o1,o2,c2,o3,k)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,k,c2,o4) E4(c1,m,o1,o2,c2,i,o3,o4)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,k,c2,o3) E3(c1,o1,o2,c2,i,o3)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,m,o1,o2,o4,c2,i,o3,k,o5)
(    0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,o1,o2,o3,c2,i,k,o4)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,o3,c2,o4) E4(c1,m,o1,o2,c2,i,o4,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o4) E4(c1,o1,o2,o4,c2,o3,k,i)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o3) E3(c1,o1,o2,c2,i,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o5,o4) E5(c1,i,k,o3,o4,o5,m,o2,o1,c2)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o1,o2,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,m) E4(c1,i,k,o3,o4,c2,o2,o1)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o3,o4) E4(c1,i,k,o4,o1,m,o2,c2)
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(   -0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o1,o2,c2)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,m) E4(c1,i,k,o3,o4,c2,o2,o1)
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(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,o2) E4(c1,i,k,o3,o4,m,c2,o1)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,c2,o3,o2) E3(c1,i,k,o3,o1,c2)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o5,o4) E5(c1,m,o1,o2,o4,o5,i,o3,k,c2)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,o1,o2,o3,c2,i,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,o3) E4(c1,m,o1,o2,c2,i,o4,k)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,i) E4(c1,m,o1,o2,c2,o4,o3,k)
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(   -0.25000000) T2(o1,o2,m,a) V2(c1,c2,o3,k) E3(c1,o1,o2,c2,i,o3)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,m,o1,o2,o4,c2,i,o3,k,o5)
(    0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,o1,o2,o3,c2,i,k,o4)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,o3,c2,o4) E4(c1,m,o1,o2,c2,i,o4,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o4) E4(c1,o1,o2,o4,c2,o3,k,i)
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(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o1,o2,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,m) E4(c1,i,k,o3,o4,c2,o2,o1)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o3,o4) E4(c1,i,k,o4,o1,m,o2,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o3,m) E3(c1,i,k,o1,c2,o2)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o5,o4) E5(c1,i,k,o3,o4,o5,m,o2,o1,c2)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o1,o2,c2)
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(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,o1) E4(c1,i,k,o3,o4,m,o2,c2)
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(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o5,o4) E5(c1,m,o1,o2,o4,o5,i,o3,k,c2)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,o1,o2,o3,c2,i,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,o3) E4(c1,m,o1,o2,c2,i,o4,k)
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(    0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,m,o1,o2,o4,c2,i,o3,k,o5)
(    0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,o1,o2,o3,c2,i,k,o4)
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(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o4) E4(c1,o1,o2,o4,c2,o3,k,i)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o3) E3(c1,o1,o2,c2,i,k)
(    0.25000000) T2(o1,o2,o3,a) V2(o4,o5,o6,o7) E5(i,k,o3,o4,o5,m,o2,o1,o6,o7)
(    0.25000000) T2(o1,o2,m,a) V2(o3,o4,o5,o6) E4(i,k,o3,o4,o1,o2,o5,o6)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o5,o6) E4(i,k,o3,o4,o5,o2,o1,o6)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o6,o5) E4(i,k,o3,o4,o6,o2,o1,o5)
(    0.25000000) T2(o1,o2,o3,a) V2(o3,o5,o4,o6) E4(i,k,o4,o5,m,o2,o1,o6)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o3,o5) E3(i,k,o4,o1,o2,o5)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o3,o5,o4) E3(i,k,o4,o5,o2,o1)
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(   -0.25000000) T2(o1,o2,m,a) V2(c1,c2,o3,k) E3(c1,o1,o2,o3,i,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o5,o4) E5(c1,m,o1,o2,o4,o5,i,o3,k,c2)
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(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,o3) E4(c1,m,o1,o2,o4,i,c2,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,m,o4) E4(c1,o1,o2,o4,i,o3,k,c2)
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(    0.25000000) T2(o1,o2,o3,v1) V2(c1,c2,v1,a) E4(c1,i,k,o3,o2,m,c2,o1)
(    0.25000000) T2(o1,o2,m,v1) V2(c1,c2,v1,a) E3(c1,i,k,o2,o1,c2)
(    0.25000000) T2(o1,o2,o3,v1) V2(c1,c2,a,v1) E4(c1,m,o1,o2,k,i,o3,c2)
(    0.25000000) T2(o1,o2,m,v1) V2(c1,c2,a,v1) E3(c1,o1,o2,k,i,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o5,o4) E5(c1,i,k,o3,o4,o5,m,o2,o1,c2)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o1,o2,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,m) E4(c1,i,k,o3,o4,c2,o2,o1)
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(   -0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,i,k,o3,c2,o1,o2,o4)
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(   -0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,o1,o2,o3,c2,i,k,o4)
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(   -0.25000000) T2(o1,o2,m,a) V2(c1,i,c2,o3) E3(c1,o1,o2,c2,o3,k)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,k,c2,o4) E4(c1,m,o1,o2,c2,i,o3,o4)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,k,c2,o3) E3(c1,o1,o2,c2,i,o3)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,m,o1,o2,o4,c2,i,o3,k,o5)
(    0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,o1,o2,o3,c2,i,k,o4)
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(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o3) E3(c1,o1,o2,c2,i,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o5,o4) E5(c1,i,k,o3,o4,o5,m,o2,o1,c2)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o1,o2,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,m) E4(c1,i,k,o3,o4,c2,o2,o1)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,o1) E4(c1,i,k,o3,o4,m,o2,c2)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o3,o1) E3(c1,i,k,o3,c2,o2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,o2) E4(c1,i,k,o3,o4,m,c2,o1)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o3,o2) E3(c1,i,k,o3,o1,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o5,o4) E5(c1,m,o1,o2,o4,o5,i,o3,k,c2)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,i,k,o3,o4,o1,o2,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,o3) E4(c1,m,o1,o2,o4,i,c2,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,i) E4(c1,m,o1,o2,o4,c2,o3,k)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o3,i) E3(c1,o1,o2,o3,c2,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,k) E4(c1,m,o1,o2,o4,i,o3,c2)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o3,k) E3(c1,o1,o2,o3,i,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o5,o4) E5(c1,m,o1,o2,o4,o5,i,o3,k,c2)
(    0.25000000) T2(o1,o2,m,a) V2(c1,c2,o4,o3) E4(c1,o1,o2,o3,o4,i,k,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,o4,o3) E4(c1,m,o1,o2,o4,i,c2,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,m,o4) E4(c1,o1,o2,o4,i,o3,k,c2)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,c2,m,o3) E3(c1,o1,o2,i,c2,k)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,i,k,o3,o4,c2,m,o2,o1,o5)
(    0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,i,k,o3,c2,o1,o2,o4)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o4) E4(c1,i,k,o3,c2,o4,o2,o1)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,o3,c2,o4) E4(c1,i,k,o4,c2,m,o2,o1)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o3) E3(c1,i,k,c2,o1,o2)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,i,k,o3,o4,c2,m,o2,o1,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,i,k,o3,c2,o1,o2,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o4) E4(c1,i,k,o3,c2,o4,o2,o1)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o1,c2,o4) E4(c1,i,k,o3,c2,m,o2,o4)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,o1,c2,o3) E3(c1,i,k,c2,o3,o2)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o2,c2,o4) E4(c1,i,k,o3,c2,m,o4,o1)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,o2,c2,o3) E3(c1,i,k,c2,o1,o3)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o4,c2,o5) E5(c1,m,o1,o2,o4,c2,i,o3,k,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(c1,o3,c2,o4) E4(c1,o1,o2,o3,c2,i,k,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,o3,c2,o4) E4(c1,m,o1,o2,c2,i,o4,k)
(   -0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o4) E4(c1,o1,o2,o4,c2,o3,k,i)
(    0.25000000) T2(o1,o2,o3,a) V2(c1,m,c2,o3) E3(c1,o1,o2,c2,i,k)
(    0.25000000) T2(o1,o2,o3,a) V2(o4,o5,o6,o7) E5(i,k,o3,o4,o5,m,o2,o1,o6,o7)
(    0.25000000) T2(o1,o2,m,a) V2(o3,o4,o5,o6) E4(i,k,o3,o4,o1,o2,o5,o6)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o5,o6) E4(i,k,o3,o4,o5,o2,o1,o6)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o6,o5) E4(i,k,o3,o4,o6,o2,o1,o5)
(    0.25000000) T2(o1,o2,o3,a) V2(o3,o5,o4,o6) E4(i,k,o4,o5,m,o2,o1,o6)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o3,o5) E3(i,k,o4,o1,o2,o5)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o3,o5,o4) E3(i,k,o4,o5,o2,o1)
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(    0.25000000) T2(o1,o2,o3,a) V2(o3,o4,o5,o6) E4(i,k,o4,o5,m,o2,o6,o1)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o3,o5,o4) E3(i,k,o4,o5,o2,o1)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o3,o5) E3(i,k,o4,o1,o2,o5)
(   -0.25000000) T2(o1,o2,o3,a) V2(o4,o5,o6,o7) E5(i,k,o3,o4,o5,m,o2,o1,o6,o7)
(   -0.25000000) T2(o1,o2,m,a) V2(o3,o4,o5,o6) E4(i,k,o3,o4,o1,o2,o5,o6)
(   -0.25000000) T2(o1,o2,o3,a) V2(m,o4,o5,o6) E4(i,k,o3,o4,o5,o2,o1,o6)
(   -0.25000000) T2(o1,o2,o3,a) V2(m,o4,o6,o5) E4(i,k,o3,o4,o6,o2,o1,o5)
(   -0.25000000) T2(o1,o2,o3,a) V2(o1,o4,o5,o6) E4(i,k,o3,o4,m,o2,o5,o6)
(   -0.25000000) T2(o1,o2,m,a) V2(o1,o3,o4,o5) E3(i,k,o3,o4,o2,o5)
(   -0.25000000) T2(o1,o2,o3,a) V2(m,o1,o5,o4) E3(i,k,o3,o5,o2,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(o1,o4,o6,o5) E4(i,k,o3,o4,m,o2,o6,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(o1,o3,o5,o4) E3(i,k,o3,o5,o2,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(m,o1,o4,o5) E3(i,k,o3,o4,o2,o5)
(   -0.25000000) T2(o1,o2,o3,a) V2(o2,o4,o5,o6) E4(i,k,o3,o4,m,o5,o1,o6)
(   -0.25000000) T2(o1,o2,m,a) V2(o2,o3,o4,o5) E3(i,k,o3,o1,o4,o5)
(   -0.25000000) T2(o1,o2,o3,a) V2(m,o2,o5,o4) E3(i,k,o3,o5,o4,o1)
(   -0.25000000) T2(o1,o2,o3,a) V2(o2,o4,o6,o5) E4(i,k,o3,o4,m,o6,o1,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(o2,o3,o5,o4) E3(i,k,o3,o1,o5,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(m,o2,o4,o5) E3(i,k,o3,o4,o5,o1)
(   -0.25000000) T2(o1,o2,o3,a) V2(o1,o2,o4,o5) E3(i,k,o3,m,o5,o4)
(   -0.25000000) T2(o1,o2,m,a) V2(o1,o2,o3,o4) E2(i,k,o3,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(o1,o2,o5,o4) E3(i,k,o3,m,o4,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(o1,o2,o4,o3) E2(i,k,o4,o3)
(   -0.25000000) T2(o1,o2,o3,a) V2(o4,o5,o6,o7) E5(m,o1,o2,o4,o5,i,o3,k,o6,o7)
(   -0.25000000) T2(o1,o2,m,a) V2(o3,o4,o5,o6) E4(o1,o2,o3,o4,i,k,o5,o6)
(   -0.25000000) T2(o1,o2,o3,a) V2(o3,o4,o5,o6) E4(m,o1,o2,o4,i,o5,k,o6)
(   -0.25000000) T2(o1,o2,o3,a) V2(o3,o4,o6,o5) E4(m,o1,o2,o4,i,o6,k,o5)
(   -0.25000000) T2(o1,o2,o3,a) V2(i,o4,o5,o6) E4(m,o1,o2,o4,o5,o3,k,o6)
(   -0.25000000) T2(o1,o2,m,a) V2(i,o3,o4,o5) E3(o1,o2,o3,o4,k,o5)
(   -0.25000000) T2(o1,o2,o3,a) V2(i,o3,o4,o5) E3(m,o1,o2,o4,o5,k)
(   -0.25000000) T2(o1,o2,o3,a) V2(i,o4,o6,o5) E4(m,o1,o2,o4,o6,o3,k,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(i,o3,o5,o4) E3(o1,o2,o3,o5,k,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(i,o3,o5,o4) E3(m,o1,o2,o5,o4,k)
(   -0.25000000) T2(o1,o2,o3,a) V2(k,o4,o5,o6) E4(m,o1,o2,o4,i,o3,o5,o6)
(   -0.25000000) T2(o1,o2,m,a) V2(k,o3,o4,o5) E3(o1,o2,o3,i,o4,o5)
(   -0.25000000) T2(o1,o2,o3,a) V2(k,o3,o4,o5) E3(m,o1,o2,i,o5,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(k,o4,o6,o5) E4(m,o1,o2,o4,i,o3,o6,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(k,o3,o5,o4) E3(o1,o2,o3,i,o5,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(k,o3,o5,o4) E3(m,o1,o2,i,o4,o5)
(   -0.25000000) T2(o1,o2,o3,a) V2(i,k,o4,o5) E3(m,o1,o2,o4,o3,o5)
(   -0.25000000) T2(o1,o2,m,a) V2(i,k,o3,o4) E2(o1,o2,o3,o4)
(   -0.25000000) T2(o1,o2,o3,a) V2(i,k,o5,o4) E3(m,o1,o2,o5,o3,o4)
(   -0.25000000) T2(o1,o2,m,a) V2(i,k,o4,o3) E2(o1,o2,o4,o3)
(    0.25000000) T2(o1,o2,o3,a) V2(o4,o5,o6,o7) E5(m,o1,o2,o4,o5,i,o3,k,o6,o7)
(    0.25000000) T2(o1,o2,m,a) V2(o3,o4,o5,o6) E4(o1,o2,o3,o4,i,k,o5,o6)
(    0.25000000) T2(o1,o2,o3,a) V2(o3,o4,o5,o6) E4(m,o1,o2,o4,i,o5,k,o6)
(    0.25000000) T2(o1,o2,o3,a) V2(o3,o4,o6,o5) E4(m,o1,o2,o4,i,o6,k,o5)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o5,o4,o6) E4(o1,o2,o4,o5,o3,k,i,o6)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o3,o5) E3(o1,o2,o4,i,k,o5)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o3,o4,o5) E3(o1,o2,o4,o5,k,i)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o5,o6) E4(o1,o2,o4,o5,o3,k,o6,i)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o3,o4,o5) E3(o1,o2,o4,o5,k,i)
(    0.25000000) T2(o1,o2,o3,a) V2(m,o4,o3,o5) E3(o1,o2,o4,i,k,o5)
(    0.25000000) T2(o1,o2,o3,v1) V2(o4,a,o5,v1) E4(i,k,o3,o4,m,o2,o1,o5)
(    0.25000000) T2(o1,o2,m,v1) V2(o3,a,o4,v1) E3(i,k,o3,o1,o2,o4)
(    0.25000000) T2(o1,o2,o3,v1) V2(m,a,o4,v1) E3(i,k,o3,o4,o2,o1)
(    0.25000000) T2(o1,o2,o3,v1) V2(o3,a,o4,v1) E3(i,k,o4,m,o2,o1)
(    0.25000000) T2(o1,o2,o3,v1) V2(m,a,o3,v1) E2(i,k,o1,o2)
(    0.25000000) T2(o1,o2,o3,v1) V2(o4,a,o5,v1) E4(m,o1,o2,o4,i,o3,k,o5)
(    0.25000000) T2(o1,o2,m,v1) V2(o3,a,o4,v1) E3(o1,o2,o3,i,k,o4)
(    0.25000000) T2(o1,o2,o3,v1) V2(o3,a,o4,v1) E3(m,o1,o2,i,k,o4)
(    0.25000000) T2(o1,o2,o3,v1) V2(m,a,o4,v1) E3(o1,o2,o4,o3,i,k)
(    0.25000000) T2(o1,o2,o3,v1) V2(m,a,o3,v1) E2(i,k,o1,o2)
(    1.00000000) Ecas T2(o1,o2,o3,a) E3(i,k,o3,m,o2,o1)
(    1.00000000) Ecas T2(o1,o2,m,a) E2(i,k,o1,o2)

Decompose RDMs .....


< RESULT >
    0 : (    0.50000000) D3(i,k,o4,o3,o2,o1) T2(o1,o2,o4,a) h(m,o3)
    1 : (    0.50000000) D3(i,k,o4,m,o3,o2) T2(o2,o3,o1,a) h(o4,o1)
    2 : (    1.00000000) D2(i,k,o3,o2) T2(o3,o2,o1,a) h(m,o1)
    3 : (   -0.50000000) D3(i,k,o4,m,o3,o2) T2(o1,o3,o4,a) h(o2,o1)
    4 : (   -0.50000000) D2(i,k,o3,o2) T2(o1,o2,m,a) h(o3,o1)
    5 : (   -0.50000000) D3(i,k,o4,m,o3,o2) T2(o2,o1,o4,a) h(o3,o1)
    6 : (   -0.50000000) D2(i,k,o3,o2) T2(o3,o1,m,a) h(o2,o1)
    7 : (   -0.50000000) D3(k,o2,o1,o4,o3,m) T2(o3,o4,o2,a) h(i,o1)
    8 : (   -0.50000000) D2(k,o1,o3,o2) T2(o2,o3,m,a) h(i,o1)
    9 : (   -0.50000000) D3(i,o4,o3,m,o2,o1) T2(o2,o1,o4,a) h(k,o3)
   10 : (   -0.50000000) D2(i,o3,o2,o1) T2(o2,o1,m,a) h(k,o3)
   11 : (    1.00000000) D3(i,k,o1,m,o2,o3) T2(o3,o2,o1,v1) h(a,v1)
   12 : (    1.00000000) D2(i,k,o1,o2) T2(o1,o2,m,v1) h(a,v1)
   13 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o1,o2,o4,a) V2(c1,m,c1,o3)
   14 : (    1.00000000) D3(i,k,o4,m,o3,o2) T2(o2,o3,o1,a) V2(c1,o4,c1,o1)
   15 : (    2.00000000) D2(i,k,o3,o2) T2(o3,o2,o1,a) V2(c1,m,c1,o1)
   16 : (   -1.00000000) D3(i,k,o4,m,o3,o2) T2(o1,o3,o4,a) V2(c1,o2,c1,o1)
   17 : (   -1.00000000) D2(i,k,o3,o2) T2(o1,o2,m,a) V2(c1,o3,c1,o1)
   18 : (   -1.00000000) D3(i,k,o4,m,o3,o2) T2(o2,o1,o4,a) V2(c1,o3,c1,o1)
   19 : (   -1.00000000) D2(i,k,o3,o2) T2(o3,o1,m,a) V2(c1,o2,c1,o1)
   20 : (   -1.00000000) D3(k,o4,o3,o2,o1,m) T2(o1,o2,o4,a) V2(c1,i,c1,o3)
   21 : (   -1.00000000) D2(k,o3,o2,o1) T2(o1,o2,m,a) V2(c1,i,c1,o3)
   22 : (   -1.00000000) D3(i,o4,o3,m,o2,o1) T2(o2,o1,o4,a) V2(c1,k,c1,o3)
   23 : (   -1.00000000) D2(i,o3,o2,o1) T2(o2,o1,m,a) V2(c1,k,c1,o3)
   24 : (   -0.50000000) D3(i,k,o4,o3,o2,o1) T2(o1,o2,o4,a) V2(c1,c1,m,o3)
   25 : (   -0.50000000) D3(i,k,o4,m,o3,o2) T2(o2,o3,o1,a) V2(c1,c1,o4,o1)
   26 : (   -1.00000000) D2(i,k,o3,o2) T2(o3,o2,o1,a) V2(c1,c1,m,o1)
   27 : (    0.50000000) D3(i,k,o4,m,o3,o2) T2(o1,o3,o4,a) V2(c1,c1,o2,o1)
   28 : (    0.50000000) D2(i,k,o3,o2) T2(o1,o2,m,a) V2(c1,c1,o3,o1)
   29 : (    0.50000000) D3(i,k,o4,m,o3,o2) T2(o2,o1,o4,a) V2(c1,c1,o3,o1)
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   30 : (    0.50000000) D2(i,k,o3,o2) T2(o3,o1,m,a) V2(c1,c1,o2,o1)
   31 : (    0.50000000) D3(k,o4,o3,o2,o1,m) T2(o1,o2,o4,a) V2(c1,c1,i,o3)
   32 : (    0.50000000) D2(k,o3,o2,o1) T2(o1,o2,m,a) V2(c1,c1,i,o3)
   33 : (    0.50000000) D3(i,o4,o3,m,o2,o1) T2(o2,o1,o4,a) V2(c1,c1,k,o3)
   34 : (    0.50000000) D2(i,o3,o2,o1) T2(o2,o1,m,a) V2(c1,c1,k,o3)
   35 : (    2.00000000) D3(i,k,o3,m,o2,o1) T2(o1,o2,o3,v1) V2(c1,a,c1,v1)
   36 : (    2.00000000) D2(i,k,o2,o1) T2(o2,o1,m,v1) V2(c1,a,c1,v1)
   37 : (   -1.00000000) D3(i,k,o3,m,o2,o1) T2(o1,o2,o3,v1) V2(c1,c1,a,v1)
   38 : (   -1.00000000) D2(i,k,o2,o1) T2(o2,o1,m,v1) V2(c1,c1,a,v1)
   39 : (    0.50000000) D4(i,k,o6,o5,o4,o3,o2,o1) T2(o2,o3,o6,a) V2(m,o5,o4,o1)

   40 : (    0.50000000) D4(i,k,o6,o5,m,o4,o3,o2) T2(o3,o4,o1,a) V2(o6,o5,o1,o2)

   41 : (    1.00000000) D3(i,k,o5,o4,o3,o2) T2(o4,o3,o1,a) V2(m,o5,o1,o2)
   42 : (    1.00000000) D3(i,k,o5,o4,o3,o2) T2(o2,o3,o1,a) V2(m,o5,o4,o1)
   43 : (   -0.50000000) D4(i,k,o6,o5,m,o4,o3,o2) T2(o1,o4,o6,a) V2(o5,o3,o2,o1)

   44 : (   -0.50000000) D3(i,k,o5,o4,o3,o2) T2(o1,o3,m,a) V2(o5,o4,o2,o1)
   45 : (   -0.50000000) D3(i,k,o5,o4,o3,o2) T2(o1,o3,o5,a) V2(m,o2,o4,o1)
   46 : (   -0.50000000) D4(i,k,o6,o5,m,o4,o3,o2) T2(o3,o1,o6,a) V2(o5,o4,o2,o1)

   47 : (   -0.50000000) D3(i,k,o5,o4,o3,o2) T2(o4,o1,m,a) V2(o5,o3,o2,o1)
   48 : (   -0.50000000) D3(i,k,o5,o4,o3,o2) T2(o2,o1,o5,a) V2(m,o3,o4,o1)
   49 : (   -0.50000000) D3(i,k,o5,m,o4,o3) T2(o2,o1,o5,a) V2(o4,o3,o1,o2)
   50 : (   -0.50000000) D2(i,k,o4,o3) T2(o2,o1,m,a) V2(o4,o3,o2,o1)
   51 : (   -0.50000000) D4(k,o6,o5,o4,o3,o2,m,o1) T2(o2,o3,o6,a) V2(i,o4,o5,o1)

   52 : (   -0.50000000) D3(k,o5,o4,o3,o2,o1) T2(o2,o3,m,a) V2(i,o4,o5,o1)
   53 : (   -0.50000000) D3(k,o5,o4,o3,m,o2) T2(o2,o3,o1,a) V2(i,o4,o5,o1)
   54 : (   -0.50000000) D4(i,o6,o5,o4,m,o3,o2,o1) T2(o3,o2,o6,a) V2(k,o4,o5,o1)

   55 : (   -0.50000000) D3(i,o5,o4,o3,o2,o1) T2(o3,o2,m,a) V2(k,o4,o5,o1)
   56 : (   -0.50000000) D3(i,o5,o4,m,o3,o2) T2(o2,o3,o1,a) V2(k,o4,o5,o1)
   57 : (   -0.50000000) D3(m,o5,o4,o3,o2,o1) T2(o5,o4,o2,a) V2(i,k,o3,o1)
   58 : (   -0.50000000) D2(o4,o3,o2,o1) T2(o4,o3,m,a) V2(i,k,o2,o1)
   59 : (    1.00000000) D4(i,k,o1,o2,m,o3,o4,o5) T2(o4,o3,o1,v1) V2(o2,a,o5,v1)

   60 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o3,o2,m,v1) V2(o4,a,o1,v1)
   61 : (    1.00000000) D3(i,k,o1,o2,o3,o4) T2(o4,o3,o1,v1) V2(m,a,o2,v1)
   62 : (    1.00000000) D3(i,k,o1,m,o2,o3) T2(o3,o2,o4,v1) V2(o1,a,o4,v1)
   63 : (    1.00000000) D2(i,k,o1,o2) T2(o1,o2,o3,v1) V2(m,a,o3,v1)
   64 : (    1.00000000) D4(i,k,o1,o2,m,o3,o4,o5) T2(o4,o5,o1,v1) V2(o2,o3,v1,a)

   65 : (    1.00000000) D3(i,k,o4,o3,o2,o1) T2(o3,o1,m,v1) V2(o4,o2,v1,a)
   66 : (    1.00000000) D3(i,k,o1,o2,o3,o4) T2(o4,o2,o1,v1) V2(m,o3,v1,a)
   67 : (    1.00000000) D3(i,k,o1,m,o2,o3) T2(o2,o3,o4,v1) V2(o1,o4,v1,a)
   68 : (    1.00000000) D2(i,k,o1,o2) T2(o2,o1,o3,v1) V2(m,o3,v1,a)
   69 : (    1.00000000) Ecas D3(i,k,o1,m,o2,o3) T2(o3,o2,o1,a)
   70 : (    1.00000000) Ecas D2(i,k,o1,o2) T2(o1,o2,m,a)


< RESULT2 >
    0 : (    0.50000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) h(m,o3)
    1 : (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) h(o4,o1)
    2 : (    1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) h(m,o1)
    3 : (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) h(o2,o1)
    4 : (   -0.50000000) D2(i,o3,k,o2) T2(o1,o2,m,a) h(o3,o1)
    5 : (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) h(o3,o1)
    6 : (   -0.50000000) D2(i,o3,k,o2) T2(o3,o1,m,a) h(o2,o1)
    7 : (   -0.50000000) D3(k,o4,o1,m,o2,o3) T2(o3,o4,o2,a) h(i,o1)
    8 : (   -0.50000000) D2(k,o3,o1,o2) T2(o2,o3,m,a) h(i,o1)
    9 : (   -0.50000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) h(k,o3)
   10 : (   -0.50000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) h(k,o3)
   11 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,v1) h(a,v1)
   12 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,m,v1) h(a,v1)
   13 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) V2(c1,c1,m,o3)
   14 : (    1.00000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) V2(c1,c1,o1,o4)
   15 : (    2.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) V2(c1,c1,m,o1)
   16 : (   -1.00000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) V2(c1,c1,o1,o2)
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   17 : (   -1.00000000) D2(i,o3,k,o2) T2(o1,o2,m,a) V2(c1,c1,o1,o3)
   18 : (   -1.00000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) V2(c1,c1,o1,o3)
   19 : (   -1.00000000) D2(i,o3,k,o2) T2(o3,o1,m,a) V2(c1,c1,o1,o2)
   20 : (   -1.00000000) D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a) V2(c1,c1,i,o3)
   21 : (   -1.00000000) D2(k,o2,o3,o1) T2(o1,o2,m,a) V2(c1,c1,i,o3)
   22 : (   -1.00000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) V2(c1,c1,k,o3)
   23 : (   -1.00000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) V2(c1,c1,k,o3)
   24 : (   -0.50000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) V2(c1,m,c1,o3)
   25 : (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) V2(c1,o1,c1,o4)
   26 : (   -1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) V2(c1,m,c1,o1)
   27 : (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) V2(c1,o1,c1,o2)
   28 : (    0.50000000) D2(i,o3,k,o2) T2(o1,o2,m,a) V2(c1,o1,c1,o3)
   29 : (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) V2(c1,o1,c1,o3)
   30 : (    0.50000000) D2(i,o3,k,o2) T2(o3,o1,m,a) V2(c1,o1,c1,o2)
   31 : (    0.50000000) D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a) V2(c1,i,c1,o3)
   32 : (    0.50000000) D2(k,o2,o3,o1) T2(o1,o2,m,a) V2(c1,i,c1,o3)
   33 : (    0.50000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) V2(c1,k,c1,o3)
   34 : (    0.50000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) V2(c1,k,c1,o3)
   35 : (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1) V2(c1,c1,a,v1)
   36 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,m,v1) V2(c1,c1,a,v1)
   37 : (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1) V2(c1,a,c1,v1)
   38 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,m,v1) V2(c1,a,c1,v1)
   39 : (    0.50000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o2,o3,o6,a) V2(m,o4,o1,o5)

   40 : (    0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o3,o4,o1,a) V2(o1,o6,o2,o5)

   41 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,a) V2(m,o1,o2,o5)
   42 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,a) V2(m,o4,o1,o5)
   43 : (   -0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o1,o4,o6,a) V2(o1,o3,o2,o5)

   44 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o1,o3,m,a) V2(o1,o4,o2,o5)
   45 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o1,o3,o5,a) V2(m,o4,o1,o2)
   46 : (   -0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o3,o1,o6,a) V2(o1,o4,o2,o5)

   47 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o4,o1,m,a) V2(o1,o3,o2,o5)
   48 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o2,o1,o5,a) V2(m,o4,o1,o3)
   49 : (   -0.50000000) D3(i,m,k,o4,o5,o3) T2(o2,o1,o5,a) V2(o1,o4,o2,o3)
   50 : (   -0.50000000) D2(i,o4,k,o3) T2(o2,o1,m,a) V2(o1,o3,o2,o4)
   51 : (   -0.50000000) D4(k,o3,o4,o1,o5,m,o6,o2) T2(o2,o3,o6,a) V2(i,o5,o1,o4)

   52 : (   -0.50000000) D3(k,o3,o4,o1,o5,o2) T2(o2,o3,m,a) V2(i,o5,o1,o4)
   53 : (   -0.50000000) D3(k,o3,o4,o2,o5,m) T2(o2,o3,o1,a) V2(i,o5,o1,o4)
   54 : (   -0.50000000) D4(i,m,o4,o1,o5,o2,o6,o3) T2(o3,o2,o6,a) V2(k,o5,o1,o4)

   55 : (   -0.50000000) D3(i,o3,o4,o1,o5,o2) T2(o3,o2,m,a) V2(k,o5,o1,o4)
   56 : (   -0.50000000) D3(i,m,o4,o2,o5,o3) T2(o2,o3,o1,a) V2(k,o5,o1,o4)
   57 : (   -0.50000000) D3(m,o3,o4,o1,o5,o2) T2(o5,o4,o2,a) V2(i,o3,k,o1)
   58 : (   -0.50000000) D2(o1,o3,o2,o4) T2(o4,o3,m,a) V2(i,o2,k,o1)
   59 : (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o3,o1,v1) V2(o2,o5,a,v1)

   60 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,m,v1) V2(o1,o4,a,v1)
   61 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1) V2(m,o2,a,v1)
   62 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o4,v1) V2(o1,o4,a,v1)
   63 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,v1) V2(m,o3,a,v1)
   64 : (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o5,o1,v1) V2(o2,v1,o3,a)

   65 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o1,m,v1) V2(o2,a,o4,v1)
   66 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1) V2(m,v1,o3,a)
   67 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,o4,v1) V2(o1,v1,o4,a)
   68 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,o3,v1) V2(m,v1,o3,a)
   69 : (    1.00000000) Ecas D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,a)
   70 : (    1.00000000) Ecas D2(i,o1,k,o2) T2(o1,o2,m,a)

< RESULT >
    0 : (    0.50000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) h(m,o3)
    1 : (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) h(o4,o1)
    2 : (    1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) h(m,o1)
    3 : (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) h(o2,o1)
    4 : (   -0.50000000) D2(i,o3,k,o2) T2(o1,o2,m,a) h(o3,o1)
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   5 : (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) h(o3,o1)
   6 : (   -0.50000000) D2(i,o3,k,o2) T2(o3,o1,m,a) h(o2,o1)
   7 : (   -0.50000000) D3(k,o4,o1,m,o2,o3) T2(o3,o4,o2,a) h(i,o1)
   8 : (   -0.50000000) D2(k,o3,o1,o2) T2(o2,o3,m,a) h(i,o1)
   9 : (   -0.50000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) h(k,o3)
  10 : (   -0.50000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) h(k,o3)
  11 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,v1) h(a,v1)
  12 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,m,v1) h(a,v1)
  13 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) V2(c1,c1,m,o3)
  14 : (    1.00000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) V2(c1,c1,o1,o4)
  15 : (    2.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) V2(c1,c1,m,o1)
  16 : (   -1.00000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) V2(c1,c1,o1,o2)
  17 : (   -1.00000000) D2(i,o3,k,o2) T2(o1,o2,m,a) V2(c1,c1,o1,o3)
  18 : (   -1.00000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) V2(c1,c1,o1,o3)
  19 : (   -1.00000000) D2(i,o3,k,o2) T2(o3,o1,m,a) V2(c1,c1,o1,o2)
  20 : (   -1.00000000) D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a) V2(c1,c1,i,o3)
  21 : (   -1.00000000) D2(k,o2,o3,o1) T2(o1,o2,m,a) V2(c1,c1,i,o3)
  22 : (   -1.00000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) V2(c1,c1,k,o3)
  23 : (   -1.00000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) V2(c1,c1,k,o3)
  24 : (   -0.50000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) V2(c1,m,c1,o3)
  25 : (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) V2(c1,o1,c1,o4)
  26 : (   -1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) V2(c1,m,c1,o1)
  27 : (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) V2(c1,o1,c1,o2)
  28 : (    0.50000000) D2(i,o3,k,o2) T2(o1,o2,m,a) V2(c1,o1,c1,o3)
  29 : (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) V2(c1,o1,c1,o3)
  30 : (    0.50000000) D2(i,o3,k,o2) T2(o3,o1,m,a) V2(c1,o1,c1,o2)
  31 : (    0.50000000) D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a) V2(c1,i,c1,o3)
  32 : (    0.50000000) D2(k,o2,o3,o1) T2(o1,o2,m,a) V2(c1,i,c1,o3)
  33 : (    0.50000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) V2(c1,k,c1,o3)
  34 : (    0.50000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) V2(c1,k,c1,o3)
  35 : (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1) V2(c1,c1,a,v1)
  36 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,m,v1) V2(c1,c1,a,v1)
  37 : (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1) V2(c1,a,c1,v1)
  38 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,m,v1) V2(c1,a,c1,v1)
  39 : (    0.50000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o2,o3,o6,a) V2(m,o4,o1,o5)

  40 : (    0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o3,o4,o1,a) V2(o1,o6,o2,o5)

  41 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,a) V2(m,o1,o2,o5)
  42 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,a) V2(m,o4,o1,o5)
  43 : (   -0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o1,o4,o6,a) V2(o1,o3,o2,o5)

  44 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o1,o3,m,a) V2(o1,o4,o2,o5)
  45 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o1,o3,o5,a) V2(m,o4,o1,o2)
  46 : (   -0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o3,o1,o6,a) V2(o1,o4,o2,o5)

  47 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o4,o1,m,a) V2(o1,o3,o2,o5)
  48 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o2,o1,o5,a) V2(m,o4,o1,o3)
  49 : (   -0.50000000) D3(i,m,k,o4,o5,o3) T2(o2,o1,o5,a) V2(o1,o4,o2,o3)
  50 : (   -0.50000000) D2(i,o4,k,o3) T2(o2,o1,m,a) V2(o1,o3,o2,o4)
  51 : (   -0.50000000) D4(k,o3,o4,o1,o5,m,o6,o2) T2(o2,o3,o6,a) V2(i,o5,o1,o4)

  52 : (   -0.50000000) D3(k,o3,o4,o1,o5,o2) T2(o2,o3,m,a) V2(i,o5,o1,o4)
  53 : (   -0.50000000) D3(k,o3,o4,o2,o5,m) T2(o2,o3,o1,a) V2(i,o5,o1,o4)
  54 : (   -0.50000000) D4(i,m,o4,o1,o5,o2,o6,o3) T2(o3,o2,o6,a) V2(k,o5,o1,o4)

  55 : (   -0.50000000) D3(i,o3,o4,o1,o5,o2) T2(o3,o2,m,a) V2(k,o5,o1,o4)
  56 : (   -0.50000000) D3(i,m,o4,o2,o5,o3) T2(o2,o3,o1,a) V2(k,o5,o1,o4)
  57 : (   -0.50000000) D3(m,o3,o4,o1,o5,o2) T2(o5,o4,o2,a) V2(i,o3,k,o1)
  58 : (   -0.50000000) D2(o1,o3,o2,o4) T2(o4,o3,m,a) V2(i,o2,k,o1)
  59 : (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o3,o1,v1) V2(o2,o5,a,v1)

  60 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,m,v1) V2(o1,o4,a,v1)
  61 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1) V2(m,o2,a,v1)
  62 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o4,v1) V2(o1,o4,a,v1)
  63 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,v1) V2(m,o3,a,v1)
  64 : (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o5,o1,v1) V2(o2,v1,o3,a)

  65 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o1,m,v1) V2(o2,a,o4,v1)
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  66 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1) V2(m,v1,o3,a)
  67 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,o4,v1) V2(o1,v1,o4,a)
  68 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,o3,v1) V2(m,v1,o3,a)
  69 : (    1.00000000) Ecas D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,a)
  70 : (    1.00000000) Ecas D2(i,o1,k,o2) T2(o1,o2,m,a)
Setting up parameters as default ....


  _______________                     ______
 |          |           .'. .'. '''''|'''''.~      ~.
 |______    |______    .'   '   '.   |    |          |
 |          |        .'           '. |    |          |
 |          |___________.'          '.|    '.______.'



! * 26 terms are replaced in the linking process ....


The linked formulas ....
0 : (    0.50000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) h(m,o3)
1 : (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) h(o4,o1)
2 : (    1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) h(m,o1)
3 : (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) h(o2,o1)
4 : (   -0.50000000) D2(i,o3,k,o2) T2(o1,o2,m,a) h(o3,o1)
5 : (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) h(o3,o1)
6 : (   -0.50000000) D2(i,o3,k,o2) T2(o3,o1,m,a) h(o2,o1)
7 : (   -0.50000000) D3(k,o4,o1,m,o2,o3) T2(o3,o4,o2,a) h(i,o1)
8 : (   -0.50000000) D2(k,o3,o1,o2) T2(o2,o3,m,a) h(i,o1)
9 : (   -0.50000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) h(k,o3)
10 : (   -0.50000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) h(k,o3)
11 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,v1) h(a,v1)
12 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,m,v1) h(a,v1)
13 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) Y0(m,o3)
14 : (    1.00000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) Y1(o1,o4)
15 : (    2.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) Y2(m,o1)
16 : (   -1.00000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) Y3(o1,o2)
17 : (   -1.00000000) D2(i,o3,k,o2) T2(o1,o2,m,a) Y4(o1,o3)
18 : (   -1.00000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) Y5(o1,o3)
19 : (   -1.00000000) D2(i,o3,k,o2) T2(o3,o1,m,a) Y6(o1,o2)
20 : (   -1.00000000) D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a) Y7(i,o3)
21 : (   -1.00000000) D2(k,o2,o3,o1) T2(o1,o2,m,a) Y8(i,o3)
22 : (   -1.00000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) Y9(k,o3)
23 : (   -1.00000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) Y10(k,o3)
24 : (   -0.50000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) Y11(m,o3)
25 : (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) Y12(o1,o4)
26 : (   -1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) Y13(m,o1)
27 : (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) Y14(o1,o2)
28 : (    0.50000000) D2(i,o3,k,o2) T2(o1,o2,m,a) Y15(o1,o3)
29 : (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) Y16(o1,o3)
30 : (    0.50000000) D2(i,o3,k,o2) T2(o3,o1,m,a) Y17(o1,o2)
31 : (    0.50000000) D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a) Y18(i,o3)
32 : (    0.50000000) D2(k,o2,o3,o1) T2(o1,o2,m,a) Y19(i,o3)
33 : (    0.50000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) Y20(k,o3)
34 : (    0.50000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) Y21(k,o3)
35 : (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1) Y22(a,v1)
36 : (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,m,v1) Y23(a,v1)
37 : (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1) Y24(a,v1)
38 : (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,m,v1) Y25(a,v1)
39 : (    0.50000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o2,o3,o6,a) V2(m,o4,o1,o5)
40 : (    0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o3,o4,o1,a) V2(o1,o6,o2,o5)
41 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,a) V2(m,o1,o2,o5)
42 : (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,a) V2(m,o4,o1,o5)
43 : (   -0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o1,o4,o6,a) V2(o1,o3,o2,o5)
44 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o1,o3,m,a) V2(o1,o4,o2,o5)
45 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o1,o3,o5,a) V2(m,o4,o1,o2)
46 : (   -0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o3,o1,o6,a) V2(o1,o4,o2,o5)
47 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o4,o1,m,a) V2(o1,o3,o2,o5)
48 : (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o2,o1,o5,a) V2(m,o4,o1,o3)
```

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49 : (   -0.50000000) D3(i,m,k,o4,o5,o3) T2(o2,o1,o5,a) V2(o1,o4,o2,o3)
50 : (   -0.50000000) D2(i,o4,k,o3) T2(o2,o1,m,a) V2(o1,o3,o2,o4)
51 : (   -0.50000000) D4(k,o3,o4,o1,o5,m,o6,o2) T2(o2,o3,o6,a) V2(i,o5,o1,o4)
52 : (   -0.50000000) D3(k,o3,o4,o1,o5,o2) T2(o2,o3,m,a) V2(i,o5,o1,o4)
53 : (   -0.50000000) D3(k,o3,o4,o2,o5,m) T2(o2,o3,o1,a) V2(i,o5,o1,o4)
54 : (   -0.50000000) D4(i,m,o4,o1,o5,o2,o6,o3) T2(o3,o2,o6,a) V2(k,o5,o1,o4)
55 : (   -0.50000000) D3(i,o3,o4,o1,o5,o2) T2(o3,o2,m,a) V2(k,o5,o1,o4)
56 : (   -0.50000000) D3(i,m,o4,o2,o5,o3) T2(o2,o3,o1,a) V2(k,o5,o1,o4)
57 : (   -0.50000000) D3(m,o3,o4,o1,o5,o2) T2(o5,o4,o2,a) V2(i,o3,k,o1)
58 : (   -0.50000000) D2(o1,o3,o2,o4) T2(o4,o3,m,a) V2(i,o2,k,o1)
59 : (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o3,o1,v1) V2(o2,o5,a,v1)
60 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,m,v1) V2(o1,o4,a,v1)
61 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1) V2(m,o2,a,v1)
62 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o4,v1) V2(o1,o4,a,v1)
63 : (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,v1) V2(m,o3,a,v1)
64 : (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o5,o1,v1) V2(o2,v1,o3,a)
65 : (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o1,m,v1) V2(o2,a,o4,v1)
66 : (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1) V2(m,v1,o3,a)
67 : (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,o4,v1) V2(o1,v1,o4,a)
68 : (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,o3,v1) V2(m,v1,o3,a)
69 : (    1.00000000) Ecas D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,a)
70 : (    1.00000000) Ecas D2(i,o1,k,o2) T2(o1,o2,m,a)

The content of each effective tensor ....
Y0 <-- (    1.00000000)  V2(c1,c1,m,o3)
Y1 <-- (    1.00000000)  V2(c1,c1,o1,o4)
Y2 <-- (    1.00000000)  V2(c1,c1,m,o1)
Y3 <-- (    1.00000000)  V2(c1,c1,o1,o2)
Y4 <-- (    1.00000000)  V2(c1,c1,o1,o3)
Y5 <-- (    1.00000000)  V2(c1,c1,o1,o3)
Y6 <-- (    1.00000000)  V2(c1,c1,o1,o2)
Y7 <-- (    1.00000000)  V2(c1,c1,i,o3)
Y8 <-- (    1.00000000)  V2(c1,c1,i,o3)
Y9 <-- (    1.00000000)  V2(c1,c1,k,o3)
Y10 <-- (    1.00000000)  V2(c1,c1,k,o3)
Y11 <-- (    1.00000000)  V2(c1,m,c1,o3)
Y12 <-- (    1.00000000)  V2(c1,o1,c1,o4)
Y13 <-- (    1.00000000)  V2(c1,m,c1,o1)
Y14 <-- (    1.00000000)  V2(c1,o1,c1,o2)
Y15 <-- (    1.00000000)  V2(c1,o1,c1,o3)
Y16 <-- (    1.00000000)  V2(c1,o1,c1,o3)
Y17 <-- (    1.00000000)  V2(c1,o1,c1,o2)
Y18 <-- (    1.00000000)  V2(c1,i,c1,o3)
Y19 <-- (    1.00000000)  V2(c1,i,c1,o3)
Y20 <-- (    1.00000000)  V2(c1,k,c1,o3)
Y21 <-- (    1.00000000)  V2(c1,k,c1,o3)
Y22 <-- (    1.00000000)  V2(c1,c1,a,v1)
Y23 <-- (    1.00000000)  V2(c1,c1,a,v1)
Y24 <-- (    1.00000000)  V2(c1,a,c1,v1)
Y25 <-- (    1.00000000)  V2(c1,a,c1,v1)


! No.0
! S2(i,k,m,a)  <--
! (    0.50000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) h(m,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,k,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,k,o2,o4,o1,m)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) h(m
,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o1,o2,o4,m,o3,a)  <----- (    1.00000000)  T2(o1,o2,o4,a) h(m,o3)

! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
```



```
! The optimal choice is .....
1: X(i,o3,k,a)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a)
2: S2(i,k,m,a)  <--  (    0.50000000) X(i,o3,k,a) h(m,o3)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,o3,k) += 1.0 sum(o2,o4,o1) D3(i,o3,k,o2,o4,o1) * T2(o1,o2,o4,)

  S2_(a)(i,k,m) += 0.5 sum(o3) X_(a)(i,o3,k,) * h(m,o3)

  Accumulate S2_(a)(i,k,m) for a


! --------------------------------------------------------------------------
! --------------------------------------------------------------------------

! No.1
! S2(i,k,m,a)  <--
! (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) h(o4,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o4,o1,a)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) T2(o2
,o3,o1,a)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,m,k,o3,o2,o1)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) h(o4
,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o3,o4,a)  <----- (    1.00000000)  T2(o2,o3,o1,a) h(o4,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,m,k,o3,o2,o1)  <--  (    1.00000000)  D3(i,m,k,o3,o4,o2) h(o4,o1)
2: S2(i,k,m,a)  <--  (    0.50000000) T2(o2,o3,o1,a) X(i,m,k,o3,o2,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^6

! * Begin scaling analysis .... *

Declare X as a o^6 tensor
X_()(i,m,k,o3,o2,o1) += 1.0 sum(o4) D3(i,m,k,o3,o4,o2) * h(o4,o1)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += 0.5 sum(o2,o3,o1) T2(o2,o3,o1,) * X_()(i,m,k,o3,o2,o1)

  Accumulate S2_(a)(i,k,m) for a


! --------------------------------------------------------------------------
! --------------------------------------------------------------------------

! No.2
! S2(i,k,m,a)  <--
! (    1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) h(m,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o1,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,a)
```

```
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o2,m,o1)  <----- (    1.00000000)  D2(i,o3,k,o2) h(m,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o3,o2,m,a)  <----- (    1.00000000)  T2(o3,o2,o1,a) h(m,o1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,k,o1,a)  <--  (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,a)
2: S2(i,k,m,a)  <--  (    1.00000000) X(i,k,o1,a) h(m,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,k,o1) += 1.0 sum(o3,o2) D2(i,o3,k,o2) * T2(o3,o2,o1,)

  S2_(a)(i,k,m) += 1.0 sum(o1) X_(a)(i,k,o1,) * h(m,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.3
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) h(o2,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o2,o1,a)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) T2(o1
,o3,o4,a)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,m,k,o3,o4,o1)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) h(o2
,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o3,o4,o2,a)  <----- (    1.00000000)  T2(o1,o3,o4,a) h(o2,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,m,k,o3,o4,o1)  <--  (    1.00000000)  D3(i,m,k,o3,o4,o2) h(o2,o1)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o1,o3,o4,a) X(i,m,k,o3,o4,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^6

! * Begin scaling analysis .... *

Declare X as a o^6 tensor
X_()(i,m,k,o3,o4,o1) += 1.0 sum(o2) D3(i,m,k,o3,o4,o2) * h(o2,o1)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o1,o3,o4) T2(o1,o3,o4,) * X_()(i,m,k,o3,o4,o1)

  Accumulate S2_(a)(i,k,m) for a
```



```
! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.4
! S2(i,k,m,a)  <--
! (   -0.50000000) D2(i,o3,k,o2) T2(o1,o2,m,a) h(o3,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,k,o1,m,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o1,o2,m
,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,k,o2,o1)  <----- (    1.00000000)  D2(i,o3,k,o2) h(o3,o1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,m,o3,a)  <----- (    1.00000000)  T2(o1,o2,m,a) h(o3,o1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o2,o1)  <--  (    1.00000000)  D2(i,o3,k,o2) h(o3,o1)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o1,o2,m,a) X(i,k,o2,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare X as a o^4 tensor
X_()(i,k,o2,o1) += 1.0 sum(o3) D2(i,o3,k,o2) * h(o3,o1)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o1,o2) T2(o1,o2,m,) * X_()(i,k,o2,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.5
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) h(o3,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o3,o1,a)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) T2(o2
,o1,o4,a)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,m,k,o4,o2,o1)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) h(o3
,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o4,o3,a)  <----- (    1.00000000)  T2(o2,o1,o4,a) h(o3,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,m,k,o4,o2,o1)  <--  (    1.00000000)  D3(i,m,k,o3,o4,o2) h(o3,o1)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o2,o1,o4,a) X(i,m,k,o4,o2,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^6
```

```
! * Begin scaling analysis .... *

Declare X as a o^6 tensor
X_()(i,m,k,o4,o2,o1) += 1.0 sum(o3) D3(i,m,k,o3,o4,o2) * h(o3,o1)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o2,o1,o4) T2(o2,o1,o4,) * X_()(i,m,k,o4,o2,o1)

  Accumulate S2_(a)(i,k,m) for a


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.6
! S2(i,k,m,a)  <--
! (   -0.50000000) D2(i,o3,k,o2) T2(o3,o1,m,a) h(o2,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o2,o1,m,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o3,o1,m
,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,o3,k,o1)  <----- (    1.00000000)  D2(i,o3,k,o2) h(o2,o1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,m,o2,a)  <----- (    1.00000000)  T2(o3,o1,m,a) h(o2,o1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o3,k,o1)  <--  (    1.00000000)  D2(i,o3,k,o2) h(o2,o1)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o3,o1,m,a) X(i,o3,k,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare X as a o^4 tensor
X_()(i,o3,k,o1) += 1.0 sum(o2) D2(i,o3,k,o2) * h(o2,o1)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o3,o1) T2(o3,o1,m,) * X_()(i,o3,k,o1)

  Accumulate S2_(a)(i,k,m) for a


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.7
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(k,o4,o1,m,o2,o3) T2(o3,o4,o2,a) h(i,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(k,o1,m,a)  <----- (    1.00000000)  D3(k,o4,o1,m,o2,o3) T2(o3,o4,
o2,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(k,o4,m,o2,o3,i)  <----- (    1.00000000)  D3(k,o4,o1,m,o2,o3) h(i
,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o3,o4,o2,i,o1,a)  <----- (    1.00000000)  T2(o3,o4,o2,a) h(i,o1)
```



```
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(k,o1,m,a)  <--  (    1.00000000)  D3(k,o4,o1,m,o2,o3) T2(o3,o4,o2,a)
2: S2(i,k,m,a)  <--  (   -0.50000000) X(k,o1,m,a) h(i,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(k,o1,m) += 1.0 sum(o4,o2,o3) D3(k,o4,o1,m,o2,o3) * T2(o3,o4,o2,)

  S2_(a)(i,k,m) += -0.5 sum(o1) X_(a)(k,o1,m,) * h(i,o1)

  Accumulate S2_(a)(i,k,m) for a


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.8
! S2(i,k,m,a)  <--
! (   -0.50000000) D2(k,o3,o1,o2) T2(o2,o3,m,a) h(i,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(k,o1,m,a)  <----- (    1.00000000)  D2(k,o3,o1,o2) T2(o2,o3,m,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(k,o3,o2,i)  <----- (    1.00000000)  D2(k,o3,o1,o2) h(i,o1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o3,m,i,o1,a)  <----- (    1.00000000)  T2(o2,o3,m,a) h(i,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(k,o1,m,a)  <--  (    1.00000000)  D2(k,o3,o1,o2) T2(o2,o3,m,a)
2: S2(i,k,m,a)  <--  (   -0.50000000) X(k,o1,m,a) h(i,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(k,o1,m) += 1.0 sum(o3,o2) D2(k,o3,o1,o2) * T2(o2,o3,m,)

  S2_(a)(i,k,m) += -0.5 sum(o1) X_(a)(k,o1,m,) * h(i,o1)

  Accumulate S2_(a)(i,k,m) for a


! ----------------------------------------------------------------------
! ----------------------------------------------------------------------

! No.9
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) h(k,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,o3,a)  <----- (    1.00000000)  D3(i,m,o3,o1,o4,o2) T2(o2,o1,
```

```
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,m,o1,o4,o2,k)  <----- (    1.00000000)  D3(i,m,o3,o1,o4,o2) h(k
,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o1,o4,k,o3,a)  <----- (    1.00000000)  T2(o2,o1,o4,a) h(k,o3)

! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,m,o3,a)  <--  (    1.00000000)  D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a)
2: S2(i,k,m,a)  <--  (   -0.50000000) X(i,m,o3,a) h(k,o3)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,m,o3) += 1.0 sum(o1,o4,o2) D3(i,m,o3,o1,o4,o2) * T2(o2,o1,o4,)

  S2_(a)(i,k,m) += -0.5 sum(o3) X_(a)(i,m,o3,) * h(k,o3)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.10
! S2(i,k,m,a)  <--
! (   -0.50000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) h(k,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,m,a)  <----- (    1.00000000)  D2(i,o2,o3,o1) T2(o2,o1,m,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o2,o1,k)  <----- (    1.00000000)  D2(i,o2,o3,o1) h(k,o3)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o1,m,k,o3,a)  <----- (    1.00000000)  T2(o2,o1,m,a) h(k,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,o3,m,a)  <--  (    1.00000000)  D2(i,o2,o3,o1) T2(o2,o1,m,a)
2: S2(i,k,m,a)  <--  (   -0.50000000) X(i,o3,m,a) h(k,o3)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,o3,m) += 1.0 sum(o2,o1) D2(i,o2,o3,o1) * T2(o2,o1,m,)

  S2_(a)(i,k,m) += -0.5 sum(o3) X_(a)(i,o3,m,) * h(k,o3)

  Accumulate S2_(a)(i,k,m) for a
```



```
! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.11
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,v1) h(a,v1)
Case 0 ..... X(i,m,k,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3) T2(o3,o2,o
1,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,m,k,o2,o1,o3,a,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3)
 h(a,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o3,o2,o1,a)  <----- (    1.00000000)  T2(o3,o2,o1,v1) h(a,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,m,k,v1)  <--  (    1.00000000)  D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) X(i,m,k,v1) h(a,v1)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^3 tensor
  X_(v1)(i,m,k) += 1.0 sum(o2,o1,o3) D3(i,m,k,o2,o1,o3) * T2(o3,o2,o1,)

  for a in {vir}:
    Read S2 from GA for a
    S2_(a)(i,k,m) += 1.0 sum() X_(v1)(i,m,k,) * h(a,v1)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------------
! ---------------------------------------------------------------------------

! No.12
! S2(i,k,m,a)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,m,v1) h(a,v1)
Case 0 ..... X(i,k,m,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) T2(o1,o2,m,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o1,k,o2,a,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) h(a,v1)
! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o1,o2,m,a)  <----- (    1.00000000)  T2(o1,o2,m,v1) h(a,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,k,m,v1)  <--  (    1.00000000)  D2(i,o1,k,o2) T2(o1,o2,m,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) X(i,k,m,v1) h(a,v1)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^3 tensor
  X_(v1)(i,k,m) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * T2(o1,o2,m,)
```

```
  for a in {vir}:
    Read S2 from GA for a
    S2_(a)(i,k,m) += 1.0 sum() X_(v1)(i,k,m,) * h(a,v1)

    Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.13
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) Y0(m,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,k,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,k,o2,o4,o1,m)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y0(
m,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o1,o2,o4,m,o3,a)  <----- (    1.00000000)  T2(o1,o2,o4,a) Y0(m,o3
)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,o3,k,a)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a)
2: S2(i,k,m,a)  <--  (    1.00000000) X(i,o3,k,a) Y0(m,o3)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y0 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,o3,k) += 1.0 sum(o2,o4,o1) D3(i,o3,k,o2,o4,o1) * T2(o1,o2,o4,)

  S2_(a)(i,k,m) += 1.0 sum(o3) X_(a)(i,o3,k,) * Y0(m,o3)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.14
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) Y1(o1,o4)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o4,o1,a)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) T2(o2
,o3,o1,a)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,m,k,o3,o2,o1)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) Y1(o
1,o4)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o3,o4,a)  <----- (    1.00000000)  T2(o2,o3,o1,a) Y1(o1,o4)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
```



```
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,m,k,o3,o2,o1)  <--  (    1.00000000)  D3(i,m,k,o3,o4,o2) Y1(o1,o4)
2: S2(i,k,m,a)  <--  (    1.00000000) T2(o2,o3,o1,a) X(i,m,k,o3,o2,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^6

! * Begin scaling analysis .... *

Declare Y1 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^6 tensor
X_()(i,m,k,o3,o2,o1) += 1.0 sum(o4) D3(i,m,k,o3,o4,o2) * Y1(o1,o4)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += 1.0 sum(o2,o3,o1) T2(o2,o3,o1,) * X_()(i,m,k,o3,o2,o1)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.15
! S2(i,k,m,a)  <--
! (    2.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) Y2(m,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o1,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o2,m,o1)  <----- (    1.00000000)  D2(i,o3,k,o2) Y2(m,o1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o3,o2,m,a)  <----- (    1.00000000)  T2(o3,o2,o1,a) Y2(m,o1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,k,o1,a)  <--  (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,a)
2: S2(i,k,m,a)  <--  (    2.00000000) X(i,k,o1,a) Y2(m,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y2 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,k,o1) += 1.0 sum(o3,o2) D2(i,o3,k,o2) * T2(o3,o2,o1,)

  S2_(a)(i,k,m) += 2 sum(o1) X_(a)(i,k,o1,) * Y2(m,o1)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
```

```
! ---------------------------------------------------------------------

! No.16
! S2(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) Y3(o1,o2)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o2,o1,a)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) T2(o1
,o3,o4,a)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,m,k,o3,o4,o1)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) Y3(o
1,o2)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o3,o4,o2,a)  <----- (    1.00000000)  T2(o1,o3,o4,a) Y3(o1,o2)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,m,k,o3,o4,o1)  <--  (    1.00000000)  D3(i,m,k,o3,o4,o2) Y3(o1,o2)
2: S2(i,k,m,a)  <--  (   -1.00000000) T2(o1,o3,o4,a) X(i,m,k,o3,o4,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^6

! * Begin scaling analysis .... *

Declare Y3 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^6 tensor
X_()(i,m,k,o3,o4,o1) += 1.0 sum(o2) D3(i,m,k,o3,o4,o2) * Y3(o1,o2)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -1 sum(o1,o3,o4) T2(o1,o3,o4,) * X_()(i,m,k,o3,o4,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.17
! S2(i,k,m,a)  <--
! (   -1.00000000) D2(i,o3,k,o2) T2(o1,o2,m,a) Y4(o1,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,k,o1,m,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o1,o2,m
,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,k,o2,o1)  <----- (    1.00000000)  D2(i,o3,k,o2) Y4(o1,o3)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,m,o3,a)  <----- (    1.00000000)  T2(o1,o2,m,a) Y4(o1,o3)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o2,o1)  <--  (    1.00000000)  D2(i,o3,k,o2) Y4(o1,o3)
2: S2(i,k,m,a)  <--  (   -1.00000000) T2(o1,o2,m,a) X(i,k,o2,o1)

! Scaling       : O(o^5v^1)
```



```
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare Y4 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^4 tensor
X_()(i,k,o2,o1) += 1.0 sum(o3) D2(i,o3,k,o2) * Y4(o1,o3)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -1 sum(o1,o2) T2(o1,o2,m,) * X_()(i,k,o2,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.18
! S2(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) Y5(o1,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o3,o1,a)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) T2(o2
,o1,o4,a)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,m,k,o4,o2,o1)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) Y5(o
1,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o4,o3,a)  <----- (    1.00000000)  T2(o2,o1,o4,a) Y5(o1,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,m,k,o4,o2,o1)  <--  (    1.00000000)  D3(i,m,k,o3,o4,o2) Y5(o1,o3)
2: S2(i,k,m,a)  <--  (   -1.00000000) T2(o2,o1,o4,a) X(i,m,k,o4,o2,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^6

! * Begin scaling analysis .... *

Declare Y5 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^6 tensor
X_()(i,m,k,o4,o2,o1) += 1.0 sum(o3) D3(i,m,k,o3,o4,o2) * Y5(o1,o3)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -1 sum(o2,o1,o4) T2(o2,o1,o4,) * X_()(i,m,k,o4,o2,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.19
! S2(i,k,m,a)  <--
```

```
! (   −1.00000000) D2(i,o3,k,o2) T2(o3,o1,m,a) Y6(o1,o2)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o2,o1,m,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o3,o1,m
,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,o3,k,o1)  <----- (    1.00000000)  D2(i,o3,k,o2) Y6(o1,o2)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,m,o2,a)  <----- (    1.00000000)  T2(o3,o1,m,a) Y6(o1,o2)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o3,k,o1)  <--  (    1.00000000)  D2(i,o3,k,o2) Y6(o1,o2)
2: S2(i,k,m,a)  <--  (   −1.00000000) T2(o3,o1,m,a) X(i,o3,k,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare Y6 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^4 tensor
X_()(i,o3,k,o1) += 1.0 sum(o2) D2(i,o3,k,o2) * Y6(o1,o2)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += −1 sum(o3,o1) T2(o3,o1,m,) * X_()(i,o3,k,o1)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.20
! S2(i,k,m,a)  <--
! (   −1.00000000) D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a) Y7(i,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(k,o3,m,a)  <----- (    1.00000000)  D3(k,o2,o3,m,o4,o1) T2(o1,o2,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(k,o2,m,o4,o1,i)  <----- (    1.00000000)  D3(k,o2,o3,m,o4,o1) Y7(
i,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o1,o2,o4,i,o3,a)  <----- (    1.00000000)  T2(o1,o2,o4,a) Y7(i,o3
)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(k,o3,m,a)  <--  (    1.00000000)  D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a)
2: S2(i,k,m,a)  <--  (   −1.00000000) X(k,o3,m,a) Y7(i,o3)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y7 as a tensor
```



```
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(k,o3,m) += 1.0 sum(o2,o4,o1) D3(k,o2,o3,m,o4,o1) * T2(o1,o2,o4,)

  S2_(a)(i,k,m) += −1 sum(o3) X_(a)(k,o3,m,) * Y7(i,o3)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.21
! S2(i,k,m,a)  <--
! (   −1.00000000) D2(k,o2,o3,o1) T2(o1,o2,m,a) Y8(i,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(k,o3,m,a)  <----- (    1.00000000)  D2(k,o2,o3,o1) T2(o1,o2,m,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(k,o2,o1,i)  <----- (    1.00000000)  D2(k,o2,o3,o1) Y8(i,o3)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o1,o2,m,i,o3,a)  <----- (    1.00000000)  T2(o1,o2,m,a) Y8(i,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(k,o3,m,a)  <--  (    1.00000000)  D2(k,o2,o3,o1) T2(o1,o2,m,a)
2: S2(i,k,m,a)  <--  (   −1.00000000) X(k,o3,m,a) Y8(i,o3)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y8 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(k,o3,m) += 1.0 sum(o2,o1) D2(k,o2,o3,o1) * T2(o1,o2,m,)

  S2_(a)(i,k,m) += −1 sum(o3) X_(a)(k,o3,m,) * Y8(i,o3)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.22
! S2(i,k,m,a)  <--
! (   −1.00000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) Y9(k,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,o3,a)  <----- (    1.00000000)  D3(i,m,o3,o1,o4,o2) T2(o2,o1,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,m,o1,o4,o2,k)  <----- (    1.00000000)  D3(i,m,o3,o1,o4,o2) Y9(
k,o3)
! Polynomial order is O(o^6v^1)
```

```
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o1,o4,k,o3,a)  <----- (    1.00000000)  T2(o2,o1,o4,a) Y9(k,o3
)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,m,o3,a)  <--  (    1.00000000)  D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a)
2: S2(i,k,m,a)  <--  (   -1.00000000) X(i,m,o3,a) Y9(k,o3)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y9 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,m,o3) += 1.0 sum(o1,o4,o2) D3(i,m,o3,o1,o4,o2) * T2(o2,o1,o4,)

  S2_(a)(i,k,m) += -1 sum(o3) X_(a)(i,m,o3,) * Y9(k,o3)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.23
! S2(i,k,m,a)  <--
! (   -1.00000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) Y10(k,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,m,a)  <----- (    1.00000000)  D2(i,o2,o3,o1) T2(o2,o1,m,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o2,o1,k)  <----- (    1.00000000)  D2(i,o2,o3,o1) Y10(k,o3)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o1,m,k,o3,a)  <----- (    1.00000000)  T2(o2,o1,m,a) Y10(k,o3)

! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,o3,m,a)  <--  (    1.00000000)  D2(i,o2,o3,o1) T2(o2,o1,m,a)
2: S2(i,k,m,a)  <--  (   -1.00000000) X(i,o3,m,a) Y10(k,o3)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y10 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,o3,m) += 1.0 sum(o2,o1) D2(i,o2,o3,o1) * T2(o2,o1,m,)

  S2_(a)(i,k,m) += -1 sum(o3) X_(a)(i,o3,m,) * Y10(k,o3)
```



```
  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.24
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a) Y11(m,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,k,a)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,k,o2,o4,o1,m)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) Y11
(m,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o1,o2,o4,m,o3,a)  <----- (    1.00000000)  T2(o1,o2,o4,a) Y11(m,o
3)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,o3,k,a)  <--  (    1.00000000)  D3(i,o3,k,o2,o4,o1) T2(o1,o2,o4,a)
2: S2(i,k,m,a)  <--  (   -0.50000000) X(i,o3,k,a) Y11(m,o3)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y11 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,o3,k) += 1.0 sum(o2,o4,o1) D3(i,o3,k,o2,o4,o1) * T2(o1,o2,o4,)

  S2_(a)(i,k,m) += -0.5 sum(o3) X_(a)(i,o3,k,) * Y11(m,o3)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.25
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o3,o1,a) Y12(o1,o4)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o4,o1,a)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) T2(o2
,o3,o1,a)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,m,k,o3,o2,o1)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) Y12(
o1,o4)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o3,o4,a)  <----- (    1.00000000)  T2(o2,o3,o1,a) Y12(o1,o4)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
```

```
1: X(i,m,k,o3,o2,o1)  <--  (    1.00000000)  D3(i,m,k,o3,o4,o2) Y12(o1,o4)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o2,o3,o1,a) X(i,m,k,o3,o2,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^6

! * Begin scaling analysis .... *

Declare Y12 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^6 tensor
X_()(i,m,k,o3,o2,o1) += 1.0 sum(o4) D3(i,m,k,o3,o4,o2) * Y12(o1,o4)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o2,o3,o1) T2(o2,o3,o1,) * X_()(i,m,k,o3,o2,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.26
! S2(i,k,m,a)  <--
! (   -1.00000000) D2(i,o3,k,o2) T2(o3,o2,o1,a) Y13(m,o1)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o1,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o3,k,o2,m,o1)  <----- (    1.00000000)  D2(i,o3,k,o2) Y13(m,o1)

! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o3,o2,m,a)  <----- (    1.00000000)  T2(o3,o2,o1,a) Y13(m,o1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,k,o1,a)  <--  (    1.00000000)  D2(i,o3,k,o2) T2(o3,o2,o1,a)
2: S2(i,k,m,a)  <--  (   -1.00000000) X(i,k,o1,a) Y13(m,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y13 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,k,o1) += 1.0 sum(o3,o2) D2(i,o3,k,o2) * T2(o3,o2,o1,)

  S2_(a)(i,k,m) += -1 sum(o1) X_(a)(i,k,o1,) * Y13(m,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.27
```



```
! S2(i,k,m,a)  <--
! (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o1,o3,o4,a) Y14(o1,o2)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o2,o1,a)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) T2(o1
,o3,o4,a)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,m,k,o3,o4,o1)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) Y14(
o1,o2)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o3,o4,o2,a)  <----- (    1.00000000)  T2(o1,o3,o4,a) Y14(o1,o2)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,m,k,o3,o4,o1)  <--  (    1.00000000)  D3(i,m,k,o3,o4,o2) Y14(o1,o2)
2: S2(i,k,m,a)  <--  (    0.50000000) T2(o1,o3,o4,a) X(i,m,k,o3,o4,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^6

! * Begin scaling analysis .... *

Declare Y14 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^6 tensor
X_()(i,m,k,o3,o4,o1) += 1.0 sum(o2) D3(i,m,k,o3,o4,o2) * Y14(o1,o2)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += 0.5 sum(o1,o3,o4) T2(o1,o3,o4,) * X_()(i,m,k,o3,o4,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.28
! S2(i,k,m,a)  <--
! (    0.50000000) D2(i,o3,k,o2) T2(o1,o2,m,a) Y15(o1,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,k,o1,m,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o1,o2,m
,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,k,o2,o1)  <----- (    1.00000000)  D2(i,o3,k,o2) Y15(o1,o3)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,m,o3,a)  <----- (    1.00000000)  T2(o1,o2,m,a) Y15(o1,o3)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o2,o1)  <--  (    1.00000000)  D2(i,o3,k,o2) Y15(o1,o3)
2: S2(i,k,m,a)  <--  (    0.50000000) T2(o1,o2,m,a) X(i,k,o2,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^4

! * Begin scaling analysis .... *
```

```
Declare Y15 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^4 tensor
X_()(i,k,o2,o1) += 1.0 sum(o3) D2(i,o3,k,o2) * Y15(o1,o3)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += 0.5 sum(o1,o2) T2(o1,o2,m,) * X_()(i,k,o2,o1)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.29
! S2(i,k,m,a)  <--
! (    0.50000000) D3(i,m,k,o3,o4,o2) T2(o2,o1,o4,a) Y16(o1,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,k,o3,o1,a)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) T2(o2
,o1,o4,a)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,m,k,o4,o2,o1)  <----- (    1.00000000)  D3(i,m,k,o3,o4,o2) Y16(
o1,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o4,o3,a)  <----- (    1.00000000)  T2(o2,o1,o4,a) Y16(o1,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,m,k,o4,o2,o1)  <--  (    1.00000000)  D3(i,m,k,o3,o4,o2) Y16(o1,o3)
2: S2(i,k,m,a)  <--  (    0.50000000) T2(o2,o1,o4,a) X(i,m,k,o4,o2,o1)

! Scaling       : O(o^6v^1)
! Max size of X : o^6

! * Begin scaling analysis .... *

Declare Y16 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^6 tensor
X_()(i,m,k,o4,o2,o1) += 1.0 sum(o3) D3(i,m,k,o3,o4,o2) * Y16(o1,o3)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += 0.5 sum(o2,o1,o4) T2(o2,o1,o4,) * X_()(i,m,k,o4,o2,o1)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.30
! S2(i,k,m,a)  <--
! (    0.50000000) D2(i,o3,k,o2) T2(o3,o1,m,a) Y17(o1,o2)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,k,o2,o1,m,a)  <----- (    1.00000000)  D2(i,o3,k,o2) T2(o3,o1,m
```



```
,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)
Case 1 ..... X(i,o3,k,o1)  <----- (    1.00000000)  D2(i,o3,k,o2) Y17(o1,o2)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,m,o2,a)  <----- (    1.00000000)  T2(o3,o1,m,a) Y17(o1,o2)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o3,k,o1)  <--  (    1.00000000)  D2(i,o3,k,o2) Y17(o1,o2)
2: S2(i,k,m,a)  <--  (    0.50000000) T2(o3,o1,m,a) X(i,o3,k,o1)

! Scaling       : O(o^5v^1)
! Max size of X : o^4

! * Begin scaling analysis .... *

Declare Y17 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

Declare X as a o^4 tensor
X_()(i,o3,k,o1) += 1.0 sum(o2) D2(i,o3,k,o2) * Y17(o1,o2)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += 0.5 sum(o3,o1) T2(o3,o1,m,) * X_()(i,o3,k,o1)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.31
! S2(i,k,m,a)  <--
! (    0.50000000) D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a) Y18(i,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(k,o3,m,a)  <----- (    1.00000000)  D3(k,o2,o3,m,o4,o1) T2(o1,o2,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(k,o2,m,o4,o1,i)  <----- (    1.00000000)  D3(k,o2,o3,m,o4,o1) Y18
(i,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o1,o2,o4,i,o3,a)  <----- (    1.00000000)  T2(o1,o2,o4,a) Y18(i,o
3)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(k,o3,m,a)  <--  (    1.00000000)  D3(k,o2,o3,m,o4,o1) T2(o1,o2,o4,a)
2: S2(i,k,m,a)  <--  (    0.50000000) X(k,o3,m,a) Y18(i,o3)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y18 as a tensor
for c1 in {core}:
  Read V2 from GA for c1
```

```
for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(k,o3,m) += 1.0 sum(o2,o4,o1) D3(k,o2,o3,m,o4,o1) * T2(o1,o2,o4,)

  S2_(a)(i,k,m) += 0.5 sum(o3) X_(a)(k,o3,m,) * Y18(i,o3)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.32
! S2(i,k,m,a)  <--
! (    0.50000000) D2(k,o2,o3,o1) T2(o1,o2,m,a) Y19(i,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(k,o3,m,a)  <----- (    1.00000000)  D2(k,o2,o3,o1) T2(o1,o2,m,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(k,o2,o1,i)  <----- (    1.00000000)  D2(k,o2,o3,o1) Y19(i,o3)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o1,o2,m,i,o3,a)  <----- (    1.00000000)  T2(o1,o2,m,a) Y19(i,o3)

! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(k,o3,m,a)  <--  (    1.00000000)  D2(k,o2,o3,o1) T2(o1,o2,m,a)
2: S2(i,k,m,a)  <--  (    0.50000000) X(k,o3,m,a) Y19(i,o3)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y19 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(k,o3,m) += 1.0 sum(o2,o1) D2(k,o2,o3,o1) * T2(o1,o2,m,)

  S2_(a)(i,k,m) += 0.5 sum(o3) X_(a)(k,o3,m,) * Y19(i,o3)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.33
! S2(i,k,m,a)  <--
! (    0.50000000) D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a) Y20(k,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,m,o3,a)  <----- (    1.00000000)  D3(i,m,o3,o1,o4,o2) T2(o2,o1,
o4,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,m,o1,o4,o2,k)  <----- (    1.00000000)  D3(i,m,o3,o1,o4,o2) Y20
(k,o3)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o1,o4,k,o3,a)  <----- (    1.00000000)  T2(o2,o1,o4,a) Y20(k,o
```



```
3)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,m,o3,a)  <--  (    1.00000000)  D3(i,m,o3,o1,o4,o2) T2(o2,o1,o4,a)
2: S2(i,k,m,a)  <--  (    0.50000000) X(i,m,o3,a) Y20(k,o3)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y20 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,m,o3) += 1.0 sum(o1,o4,o2) D3(i,m,o3,o1,o4,o2) * T2(o2,o1,o4,)

  S2_(a)(i,k,m) += 0.5 sum(o3) X_(a)(i,m,o3,) * Y20(k,o3)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.34
! S2(i,k,m,a)  <--
! (    0.50000000) D2(i,o2,o3,o1) T2(o2,o1,m,a) Y21(k,o3)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... X(i,o3,m,a)  <----- (    1.00000000)  D2(i,o2,o3,o1) T2(o2,o1,m,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o2,o1,k)  <----- (    1.00000000)  D2(i,o2,o3,o1) Y21(k,o3)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o1,m,k,o3,a)  <----- (    1.00000000)  T2(o2,o1,m,a) Y21(k,o3)

! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,o3,m,a)  <--  (    1.00000000)  D2(i,o2,o3,o1) T2(o2,o1,m,a)
2: S2(i,k,m,a)  <--  (    0.50000000) X(i,o3,m,a) Y21(k,o3)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y21 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  X_(a)(i,o3,m) += 1.0 sum(o2,o1) D2(i,o2,o3,o1) * T2(o2,o1,m,)

  S2_(a)(i,k,m) += 0.5 sum(o3) X_(a)(i,o3,m,) * Y21(k,o3)

  Accumulate S2_(a)(i,k,m) for a
```

```
! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.35
! S2(i,k,m,a)  <--
! (    2.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1) Y22(a,v1)
Case 0 ..... X(i,m,k,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) T2(o1,o2,o
3,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,m,k,o2,o3,o1,a,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1)
 Y22(a,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o1,o2,o3,a)  <----- (    1.00000000)  T2(o1,o2,o3,v1) Y22(a,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,m,k,v1)  <--  (    1.00000000)  D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1)
2: S2(i,k,m,a)  <--  (    2.00000000) X(i,m,k,v1) Y22(a,v1)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y22 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^3 tensor
  X_(v1)(i,m,k) += 1.0 sum(o2,o3,o1) D3(i,m,k,o2,o3,o1) * T2(o1,o2,o3,)

  for a in {vir}:
    Read S2 from GA for a
    S2_(a)(i,k,m) += 2 sum() X_(v1)(i,m,k,) * Y22(a,v1)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.36
! S2(i,k,m,a)  <--
! (    2.00000000) D2(i,o2,k,o1) T2(o2,o1,m,v1) Y23(a,v1)
Case 0 ..... X(i,k,m,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,m,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,o2,k,o1,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y23(a,v1)

! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o1,m,a)  <----- (    1.00000000)  T2(o2,o1,m,v1) Y23(a,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,k,m,v1)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,m,v1)
2: S2(i,k,m,a)  <--  (    2.00000000) X(i,k,m,v1) Y23(a,v1)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *
```



```
Declare Y23 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^3 tensor
  X_(v1)(i,k,m) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,m,)

  for a in {vir}:
    Read S2 from GA for a
    S2_(a)(i,k,m) += 2 sum() X_(v1)(i,k,m,) * Y23(a,v1)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.37
! S2(i,k,m,a)  <--
! (   -1.00000000) D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1) Y24(a,v1)
Case 0 ..... X(i,m,k,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1) T2(o1,o2,o
3,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)
Case 1 ..... X(i,m,k,o2,o3,o1,a,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o3,o1)
 Y24(a,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o1,o2,o3,a)  <----- (    1.00000000)  T2(o1,o2,o3,v1) Y24(a,v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,m,k,v1)  <--  (    1.00000000)  D3(i,m,k,o2,o3,o1) T2(o1,o2,o3,v1)
2: S2(i,k,m,a)  <--  (   -1.00000000) X(i,m,k,v1) Y24(a,v1)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y24 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^3 tensor
  X_(v1)(i,m,k) += 1.0 sum(o2,o3,o1) D3(i,m,k,o2,o3,o1) * T2(o1,o2,o3,)

  for a in {vir}:
    Read S2 from GA for a
    S2_(a)(i,k,m) += -1 sum() X_(v1)(i,m,k,) * Y24(a,v1)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.38
! S2(i,k,m,a)  <--
! (   -1.00000000) D2(i,o2,k,o1) T2(o2,o1,m,v1) Y25(a,v1)
Case 0 ..... X(i,k,m,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,m,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
```

```
Case 1 ..... X(i,o2,k,o1,a,v1)  <----- (    1.00000000)  D2(i,o2,k,o1) Y25(a,v1)

! Polynomial order is O(o^5v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o2,o1,m,a)  <----- (    1.00000000)  T2(o2,o1,m,v1) Y25(a,v1)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,k,m,v1)  <--  (    1.00000000)  D2(i,o2,k,o1) T2(o2,o1,m,v1)
2: S2(i,k,m,a)  <--  (   -1.00000000) X(i,k,m,v1) Y25(a,v1)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

Declare Y25 as a tensor
for c1 in {core}:
  Read V2 from GA for c1

for v1 in {vir}:
  Read T2 from GA for v1
  Declare X as a o^3 tensor
  X_(v1)(i,k,m) += 1.0 sum(o2,o1) D2(i,o2,k,o1) * T2(o2,o1,m,)

  for a in {vir}:
    Read S2 from GA for a
    S2_(a)(i,k,m) += -1 sum() X_(v1)(i,k,m,) * Y25(a,v1)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.39
! S2(i,k,m,a)  <--
! (    0.50000000) D4(i,o4,k,o3,o5,o1,o6,o2) T2(o2,o3,o6,a) V2(m,o4,o1,o5)
! Indices of BareAmp are rotated to match with LHS.
! Indices of ERI and D4 are rotated to match with each other.
H2: 1 D4: 1
*TEST* (    0.50000000) D4(o4,i,o3,k,o1,o5,o2,o6) T2(o2,o3,o6,a) V2(o4,m,o1,o5)
! *** D4(o4,i,o3,k,o1,o5,o2,o6) T2(o2,o3,o6,a)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o2,o6,m)  <----- (    1.00000000)  D4(o4,i,o3,k,o1,o5,o2,o
6) V2(o4,m,o1,o5)
! Polynomial order is O(o^9)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,o6,o4,m,o1,o5,a)  <----- (    1.00000000)  T2(o2,o3,o6,a) V
2(o4,m,o1,o5)
! Polynomial order is O(o^9v^1)
! Maximum memory usage is O(o^6)

! The optimal choice is .....
1: X(i,o3,k,o2,o6,m)  <--  (    1.00000000)  D4(o4,i,o3,k,o1,o5,o2,o6) V2(o4,m,o
1,o5)
2: S2(i,k,m,a)  <--  (    0.50000000) T2(o2,o3,o6,a) X(i,o3,k,o2,o6,m)

! Scaling       : O(o^9)
! Max size of X : o^5

! * Begin scaling analysis .... *

! Intermediate is not processed in ad hoc fashion ....

Declare X as a o^6 tensor
for o4 in {occ}:
  Read V2 from GA for o4
  for i in {occ}:
```



```
    Read D4 from GA for o4,i
    X_()(i,o3,k,o2,o6,m) += 1.0 sum(o1,o5) V2(,m,o1,o5) * D4(,,o3,k,o1,o5,o2,o6)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += 0.5 sum(o2,o3,o6) T2(o2,o3,o6,) * X_()(i,o3,k,o2,o6,m)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.40
! S2(i,k,m,a)  <--
! (    0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o3,o4,o1,a) V2(o1,o6,o2,o5)
! Indices of BareAmp are rotated to match with LHS.
! Indices of ERI and D4 are rotated to match with each other.
H2: 1 D4: 36
*TEST* (    0.50000000) D4(o6,o3,i,m,k,o4,o5,o2) T2(o3,o4,o1,a) V2(o6,o1,o2,o5)
! *** D4(o6,o3,i,m,k,o4,o5,o2) T2(o3,o4,o1,a)  is skipped due to the priority
Case 1 ..... X(o3,i,m,k,o4,o1)  <----- (    1.00000000)  D4(o6,o3,i,m,k,o4,o5,o2
) V2(o6,o1,o2,o5)
! Polynomial order is O(o^9)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o3,o4,o6,o2,o5,a)  <----- (    1.00000000)  T2(o3,o4,o1,a) V2(o6,
o1,o2,o5)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(o3,i,m,k,o4,o1)  <--  (    1.00000000)  D4(o6,o3,i,m,k,o4,o5,o2) V2(o6,o1,o
2,o5)
2: S2(i,k,m,a)  <--  (    0.50000000) T2(o3,o4,o1,a) X(o3,i,m,k,o4,o1)

! Scaling       : O(o^9)
! Max size of X : o^5

! * Begin scaling analysis .... *

! Intermediate is not processed in ad hoc fashion ....

Declare X as a o^6 tensor
for o6 in {occ}:
  Read V2 from GA for o6
  for o3 in {occ}:
    Read D4 from GA for o6,o3
    X_()(o3,i,m,k,o4,o1) += 1.0 sum(o2,o5) V2(,o1,o2,o5) * D4(,,i,m,k,o4,o5,o2)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += 0.5 sum(o3,o4,o1) T2(o3,o4,o1,) * X_()(o3,i,m,k,o4,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.41
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,a) V2(m,o1,o2,o5)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(i,o4,k,o3,o5,o2) T2(o4,o3,o1,a)  is skipped due to the priority
Case 1 ..... X(i,o4,k,o3,m,o1)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(
```

```
m,o1,o2,o5)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o4,o3,m,o2,o5,a)  <----- (    1.00000000)  T2(o4,o3,o1,a) V2(m,o1
,o2,o5)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,o4,k,o3,m,o1)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(m,o1,o2,o5)
2: S2(i,k,m,a)  <--  (    1.00000000) T2(o4,o3,o1,a) X(i,o4,k,o3,m,o1)

! Scaling       : O(o^8)
! Max size of X : o^5

! * Begin scaling analysis .... *

for m in {occ}:
  Read V2 from GA for m
  Declare X as a o^5 tensor
  X_(m)(i,o4,k,o3,o1) += 1.0 sum(o2,o5) V2(,o1,o2,o5) * D3(i,o4,k,o3,o5,o2)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += 1.0 sum(o4,o3,o1) T2(o4,o3,o1,) * X_(m)(i,o4,k,o3,,o1)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.42
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,a) V2(m,o4,o1,o5)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(i,o4,k,o3,o5,o2) T2(o2,o3,o1,a)  is skipped due to the priority
Case 1 ..... X(i,k,o3,o2,m,o1)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(
m,o4,o1,o5)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,m,o4,o5,a)  <----- (    1.00000000)  T2(o2,o3,o1,a) V2(m,o4
,o1,o5)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o3,o2,m,o1)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(m,o4,o1,o5)
2: S2(i,k,m,a)  <--  (    1.00000000) T2(o2,o3,o1,a) X(i,k,o3,o2,m,o1)

! Scaling       : O(o^8)
! Max size of X : o^5

! * Begin scaling analysis .... *

for m in {occ}:
  Read V2 from GA for m
  Declare X as a o^5 tensor
  X_(m)(i,k,o3,o2,o1) += 1.0 sum(o4,o5) V2(,o4,o1,o5) * D3(i,o4,k,o3,o5,o2)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += 1.0 sum(o2,o3,o1) T2(o2,o3,o1,) * X_(m)(i,k,o3,o2,,o1)
```



```
    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.43
! S2(i,k,m,a)  <--
! (   -0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o1,o4,o6,a) V2(o1,o3,o2,o5)
! Indices of BareAmp are rotated to match with LHS.
! Indices of ERI and D4 are rotated to match with each other.
H2: 1 D4: 37
*TEST* (   -0.50000000) D4(o3,o6,m,i,o4,k,o2,o5) T2(o1,o4,o6,a) V2(o3,o1,o2,o5)
! *** D4(o3,o6,m,i,o4,k,o2,o5) T2(o1,o4,o6,a)  is skipped due to the priority
Case 1 ..... X(o6,m,i,o4,k,o1)  <----- (    1.00000000)  D4(o3,o6,m,i,o4,k,o2,o5
) V2(o3,o1,o2,o5)
! Polynomial order is O(o^9)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o4,o6,o3,o2,o5,a)  <----- (    1.00000000)  T2(o1,o4,o6,a) V2(o3,
o1,o2,o5)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^3)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(o6,m,i,o4,k,o1)  <--  (    1.00000000)  D4(o3,o6,m,i,o4,k,o2,o5) V2(o3,o1,o
2,o5)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o1,o4,o6,a) X(o6,m,i,o4,k,o1)

! Scaling       : O(o^9)
! Max size of X : o^5

! * Begin scaling analysis .... *

! Intermediate is not processed in ad hoc fashion ....

Declare X as a o^6 tensor
for o3 in {occ}:
  Read V2 from GA for o3
  for o6 in {occ}:
    Read D4 from GA for o3,o6
    X_()(o6,m,i,o4,k,o1) += 1.0 sum(o2,o5) V2(,o1,o2,o5) * D4(,,m,i,o4,k,o2,o5)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o1,o4,o6) T2(o1,o4,o6,) * X_()(o6,m,i,o4,k,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.44
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o1,o3,m,a) V2(o1,o4,o2,o5)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(i,o4,k,o3,o5,o2) T2(o1,o3,m,a)  is skipped due to the priority
Case 1 ..... X(i,k,o3,o1)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(o1,o4
,o2,o5)
! Polynomial order is O(o^7)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o3,m,o4,o2,o5,a)  <----- (    1.00000000)  T2(o1,o3,m,a) V2(o1,o4
,o2,o5)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
```

```
! The optimal choice is .....
1: X(i,k,o3,o1)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(o1,o4,o2,o5)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o1,o3,m,a) X(i,k,o3,o1)

! Scaling       : O(o^7)
! Max size of X : o^3

! * Begin scaling analysis .... *

for o1 in {occ}:
  Read V2 from GA for o1
  Declare X as a o^3 tensor
  X_(o1)(i,k,o3) += 1.0 sum(o4,o2,o5) V2(,o4,o2,o5) * D3(i,o4,k,o3,o5,o2)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o3) T2(o1,o3,m,) * X_(o1)(i,k,o3,)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.45
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o1,o3,o5,a) V2(m,o4,o1,o2)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(i,o4,k,o3,o5,o2) T2(o1,o3,o5,a)  is skipped due to the priority
Case 1 ..... X(i,k,o3,o5,m,o1)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(
m,o4,o1,o2)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o3,o5,m,o4,o2,a)  <----- (    1.00000000)  T2(o1,o3,o5,a) V2(m,o4
,o1,o2)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o3,o5,m,o1)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(m,o4,o1,o2)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o1,o3,o5,a) X(i,k,o3,o5,m,o1)

! Scaling       : O(o^8)
! Max size of X : o^5

! * Begin scaling analysis .... *

for m in {occ}:
  Read V2 from GA for m
  Declare X as a o^5 tensor
  X_(m)(i,k,o3,o5,o1) += 1.0 sum(o4,o2) V2(,o4,o1,o2) * D3(i,o4,k,o3,o5,o2)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o1,o3,o5) T2(o1,o3,o5,) * X_(m)(i,k,o3,o5,,o1)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.46
! S2(i,k,m,a)  <--
```



```
! (   -0.50000000) D4(i,m,k,o4,o5,o2,o6,o3) T2(o3,o1,o6,a) V2(o1,o4,o2,o5)
! Indices of BareAmp are rotated to match with LHS.
! Indices of ERI and D4 are rotated to match with each other.
H2: 1 D4: 13
*TEST* (   -0.50000000) D4(o4,k,m,i,o2,o5,o3,o6) T2(o3,o1,o6,a) V2(o4,o1,o2,o5)
! *** D4(o4,k,m,i,o2,o5,o3,o6) T2(o3,o1,o6,a)  is skipped due to the priority
Case 1 ..... X(k,m,i,o3,o6,o1)  <----- (    1.00000000)  D4(o4,k,m,i,o2,o5,o3,o6
) V2(o4,o1,o2,o5)
! Polynomial order is O(o^9)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o3,o6,o4,o2,o5,a)  <----- (    1.00000000)  T2(o3,o1,o6,a) V2(o4,
o1,o2,o5)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(k,m,i,o3,o6,o1)  <--  (    1.00000000)  D4(o4,k,m,i,o2,o5,o3,o6) V2(o4,o1,o
2,o5)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o3,o1,o6,a) X(k,m,i,o3,o6,o1)

! Scaling       : O(o^9)
! Max size of X : o^5

! * Begin scaling analysis .... *

! Intermediate is not processed in ad hoc fashion ....

Declare X as a o^6 tensor
for o4 in {occ}:
  Read V2 from GA for o4
  for k in {occ}:
    Read D4 from GA for o4,k
    X_()(k,m,i,o3,o6,o1) += 1.0 sum(o2,o5) V2(,o1,o2,o5) * D4(,,m,i,o2,o5,o3,o6)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o3,o1,o6) T2(o3,o1,o6,) * X_()(k,m,i,o3,o6,o1)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.47
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o4,o1,m,a) V2(o1,o3,o2,o5)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(i,o4,k,o3,o5,o2) T2(o4,o1,m,a)  is skipped due to the priority
Case 1 ..... X(i,o4,k,o1)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(o1,o3
,o2,o5)
! Polynomial order is O(o^7)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o4,m,o3,o2,o5,a)  <----- (    1.00000000)  T2(o4,o1,m,a) V2(o1,o3
,o2,o5)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(i,o4,k,o1)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(o1,o3,o2,o5)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o4,o1,m,a) X(i,o4,k,o1)

! Scaling       : O(o^7)
! Max size of X : o^3

! * Begin scaling analysis .... *
```

```
for o1 in {occ}:
  Read V2 from GA for o1
  Declare X as a o^3 tensor
  X_(o1)(i,o4,k) += 1.0 sum(o3,o2,o5) V2(,o3,o2,o5) * D3(i,o4,k,o3,o5,o2)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o4) T2(o4,o1,m,) * X_(o1)(i,o4,k,)

    Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.48
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,o4,k,o3,o5,o2) T2(o2,o1,o5,a) V2(m,o4,o1,o3)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(i,o4,k,o3,o5,o2) T2(o2,o1,o5,a)  is skipped due to the priority
Case 1 ..... X(i,k,o5,o2,m,o1)  <----- (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(
m,o4,o1,o3)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o5,m,o4,o3,a)  <----- (    1.00000000)  T2(o2,o1,o5,a) V2(m,o4
,o1,o3)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,k,o5,o2,m,o1)  <--  (    1.00000000)  D3(i,o4,k,o3,o5,o2) V2(m,o4,o1,o3)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o2,o1,o5,a) X(i,k,o5,o2,m,o1)

! Scaling       : O(o^8)
! Max size of X : o^5

! * Begin scaling analysis .... *

for m in {occ}:
  Read V2 from GA for m
  Declare X as a o^5 tensor
  X_(m)(i,k,o5,o2,o1) += 1.0 sum(o4,o3) V2(,o4,o1,o3) * D3(i,o4,k,o3,o5,o2)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o2,o1,o5) T2(o2,o1,o5,) * X_(m)(i,k,o5,o2,,o1)

    Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.49
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,m,k,o4,o5,o3) T2(o2,o1,o5,a) V2(o1,o4,o2,o3)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(i,m,k,o4,o5,o3) T2(o2,o1,o5,a)  is skipped due to the priority
Case 1 ..... X(i,m,k,o5,o1,o2)  <----- (    1.00000000)  D3(i,m,k,o4,o5,o3) V2(o
1,o4,o2,o3)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o5,o4,o3,a)  <----- (    1.00000000)  T2(o2,o1,o5,a) V2(o1,o4,o2,
o3)
```



```
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o5,o4,o3,a)  <--  (    1.00000000)  T2(o2,o1,o5,a) V2(o1,o4,o2,o3)
2: S2(i,k,m,a)  <--  (   -0.50000000) D3(i,m,k,o4,o5,o3) X(o5,o4,o3,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

! Intermediate is not processed in ad hoc fashion ....

Declare X as a o^3v^1 tensor
for o1 in {occ}:
  Read V2 from GA for o1
  for a in {vir}:
    Read T2 from GA for a
    X_()(o5,o4,o3,a) += 1.0 sum(o2) V2(,o4,o2,o3) * T2(o2,o1,o5,)

for a in {vir}:
  Read S2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o4,o5,o3) D3(i,m,k,o4,o5,o3) * X_()(o5,o4,o3,a)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.50
! S2(i,k,m,a)  <--
! (   -0.50000000) D2(i,o4,k,o3) T2(o2,o1,m,a) V2(o1,o3,o2,o4)
! Indices of BareAmp are rotated to match with LHS.
! *** D2(i,o4,k,o3) T2(o2,o1,m,a)  is skipped due to the priority
Case 1 ..... X(i,k,o1,o2)  <----- (    1.00000000)  D2(i,o4,k,o3) V2(o1,o3,o2,o4
)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 2 ..... X(m,o3,o4,a)  <----- (    1.00000000)  T2(o2,o1,m,a) V2(o1,o3,o2,o4
)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(i,k,o1,o2)  <--  (    1.00000000)  D2(i,o4,k,o3) V2(o1,o3,o2,o4)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o2,o1,m,a) X(i,k,o1,o2)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for o1 in {occ}:
  Read V2 from GA for o1
  Declare X as a o^3 tensor
  X_(o1)(i,k,o2) += 1.0 sum(o3,o4) V2(,o3,o2,o4) * D2(i,o4,k,o3)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o2) T2(o2,o1,m,) * X_(o1)(i,k,,o2)

    Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------
```

```
! No.51
! S2(i,k,m,a)  <--
! (   -0.50000000) D4(k,o3,o4,o1,o5,m,o6,o2) T2(o2,o3,o6,a) V2(i,o5,o1,o4)
! Indices of BareAmp are rotated to match with LHS.
! Indices of ERI and D4 are rotated to match with each other.
H2: 1 D4: 24
*TEST* (   -0.50000000) D4(o5,m,k,o3,o4,o1,o6,o2) T2(o2,o3,o6,a) V2(o5,i,o1,o4)
! *** D4(o5,m,k,o3,o4,o1,o6,o2) T2(o2,o3,o6,a)  is skipped due to the priority
Case 1 ..... X(m,k,o3,o6,o2,i)  <----- (    1.00000000)  D4(o5,m,k,o3,o4,o1,o6,o
2) V2(o5,i,o1,o4)
! Polynomial order is O(o^9)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,o6,o5,i,o1,o4,a)  <----- (    1.00000000)  T2(o2,o3,o6,a) V
2(o5,i,o1,o4)
! Polynomial order is O(o^9v^1)
! Maximum memory usage is O(o^6)

! The optimal choice is .....
1: X(m,k,o3,o6,o2,i)  <--  (    1.00000000)  D4(o5,m,k,o3,o4,o1,o6,o2) V2(o5,i,o
1,o4)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o2,o3,o6,a) X(m,k,o3,o6,o2,i)

! Scaling       : O(o^9)
! Max size of X : o^5

! * Begin scaling analysis .... *

! Intermediate is not processed in ad hoc fashion ....

Declare X as a o^6 tensor
for o5 in {occ}:
  Read V2 from GA for o5
  for m in {occ}:
    Read D4 from GA for o5,m
    X_()(m,k,o3,o6,o2,i) += 1.0 sum(o1,o4) V2(,i,o1,o4) * D4(,,k,o3,o4,o1,o6,o2)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o2,o3,o6) T2(o2,o3,o6,) * X_()(m,k,o3,o6,o2,i)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.52
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(k,o3,o4,o1,o5,o2) T2(o2,o3,m,a) V2(i,o5,o1,o4)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(k,o3,o4,o1,o5,o2) T2(o2,o3,m,a)  is skipped due to the priority
Case 1 ..... X(k,o3,o2,i)  <----- (    1.00000000)  D3(k,o3,o4,o1,o5,o2) V2(i,o5
,o1,o4)
! Polynomial order is O(o^7)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o2,o3,m,i,o5,o1,o4,a)  <----- (    1.00000000)  T2(o2,o3,m,a) V2(
i,o5,o1,o4)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^6)

! The optimal choice is .....
1: X(k,o3,o2,i)  <--  (    1.00000000)  D3(k,o3,o4,o1,o5,o2) V2(i,o5,o1,o4)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o2,o3,m,a) X(k,o3,o2,i)

! Scaling       : O(o^7)
! Max size of X : o^3
```



```
! * Begin scaling analysis .... *

for i in {occ}:
  Read V2 from GA for i
  Declare X as a o^3 tensor
  X_(i)(k,o3,o2) += 1.0 sum(o5,o1,o4) V2(,o5,o1,o4) * D3(k,o3,o4,o1,o5,o2)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o2,o3) T2(o2,o3,m,) * X_(i)(k,o3,o2,)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.53
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(k,o3,o4,o2,o5,m) T2(o2,o3,o1,a) V2(i,o5,o1,o4)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(k,o3,o4,o2,o5,m) T2(o2,o3,o1,a)  is skipped due to the priority
Case 1 ..... X(k,o3,o2,m,i,o1)  <----- (    1.00000000)  D3(k,o3,o4,o2,o5,m) V2(
i,o5,o1,o4)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,i,o5,o4,a)  <----- (    1.00000000)  T2(o2,o3,o1,a) V2(i,o5
,o1,o4)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(k,o3,o2,m,i,o1)  <--  (    1.00000000)  D3(k,o3,o4,o2,o5,m) V2(i,o5,o1,o4)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o2,o3,o1,a) X(k,o3,o2,m,i,o1)

! Scaling       : O(o^8)
! Max size of X : o^5

! * Begin scaling analysis .... *

for i in {occ}:
  Read V2 from GA for i
  Declare X as a o^5 tensor
  X_(i)(k,o3,o2,m,o1) += 1.0 sum(o5,o4) V2(,o5,o1,o4) * D3(k,o3,o4,o2,o5,m)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o2,o3,o1) T2(o2,o3,o1,) * X_(i)(k,o3,o2,m,,o1)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.54
! S2(i,k,m,a)  <--
! (   -0.50000000) D4(i,m,o4,o1,o5,o2,o6,o3) T2(o3,o2,o6,a) V2(k,o5,o1,o4)
! Indices of BareAmp are rotated to match with LHS.
! Indices of ERI and D4 are rotated to match with each other.
H2: 1 D4: 24
*TEST* (   -0.50000000) D4(o5,o2,i,m,o4,o1,o6,o3) T2(o3,o2,o6,a) V2(o5,k,o1,o4)
! *** D4(o5,o2,i,m,o4,o1,o6,o3) T2(o3,o2,o6,a)  is skipped due to the priority
Case 1 ..... X(o2,i,m,o6,o3,k)  <----- (    1.00000000)  D4(o5,o2,i,m,o4,o1,o6,o
3) V2(o5,k,o1,o4)
```

```
! Polynomial order is O(o^9)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o3,o2,o6,o5,k,o1,o4,a)  <----- (    1.00000000)  T2(o3,o2,o6,a) V
2(o5,k,o1,o4)
! Polynomial order is O(o^9v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(o2,i,m,o6,o3,k)  <--  (    1.00000000)  D4(o5,o2,i,m,o4,o1,o6,o3) V2(o5,k,o
1,o4)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o3,o2,o6,a) X(o2,i,m,o6,o3,k)

! Scaling       : O(o^9)
! Max size of X : o^5

! * Begin scaling analysis .... *

! Intermediate is not processed in ad hoc fashion ....

Declare X as a o^6 tensor
for o5 in {occ}:
  Read V2 from GA for o5
  for o2 in {occ}:
    Read D4 from GA for o5,o2
    X_()(o2,i,m,o6,o3,k) += 1.0 sum(o1,o4) V2(,k,o1,o4) * D4(,,i,m,o4,o1,o6,o3)

for a in {vir}:
  Read S2 from GA for a
  Read T2 from GA for a
  S2_(a)(i,k,m) += -0.5 sum(o3,o2,o6) T2(o3,o2,o6,) * X_()(o2,i,m,o6,o3,k)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.55
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,o3,o4,o1,o5,o2) T2(o3,o2,m,a) V2(k,o5,o1,o4)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(i,o3,o4,o1,o5,o2) T2(o3,o2,m,a)  is skipped due to the priority
Case 1 ..... X(i,o3,o2,k)  <----- (    1.00000000)  D3(i,o3,o4,o1,o5,o2) V2(k,o5
,o1,o4)
! Polynomial order is O(o^7)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o3,o2,m,k,o5,o1,o4,a)  <----- (    1.00000000)  T2(o3,o2,m,a) V2(
k,o5,o1,o4)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^6)

! The optimal choice is .....
1: X(i,o3,o2,k)  <--  (    1.00000000)  D3(i,o3,o4,o1,o5,o2) V2(k,o5,o1,o4)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o3,o2,m,a) X(i,o3,o2,k)

! Scaling       : O(o^7)
! Max size of X : o^3

! * Begin scaling analysis .... *

for k in {occ}:
  Read V2 from GA for k
  Declare X as a o^3 tensor
  X_(k)(i,o3,o2) += 1.0 sum(o5,o1,o4) V2(,o5,o1,o4) * D3(i,o3,o4,o1,o5,o2)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o3,o2) T2(o3,o2,m,) * X_(k)(i,o3,o2,)
```



```
    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.56
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(i,m,o4,o2,o5,o3) T2(o2,o3,o1,a) V2(k,o5,o1,o4)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(i,m,o4,o2,o5,o3) T2(o2,o3,o1,a)  is skipped due to the priority
Case 1 ..... X(i,m,o2,o3,k,o1)  <----- (    1.00000000)  D3(i,m,o4,o2,o5,o3) V2(
k,o5,o1,o4)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o2,o3,k,o5,o4,a)  <----- (    1.00000000)  T2(o2,o3,o1,a) V2(k,o5
,o1,o4)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^4)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(i,m,o2,o3,k,o1)  <--  (    1.00000000)  D3(i,m,o4,o2,o5,o3) V2(k,o5,o1,o4)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o2,o3,o1,a) X(i,m,o2,o3,k,o1)

! Scaling       : O(o^8)
! Max size of X : o^5

! * Begin scaling analysis .... *

for k in {occ}:
  Read V2 from GA for k
  Declare X as a o^5 tensor
  X_(k)(i,m,o2,o3,o1) += 1.0 sum(o5,o4) V2(,o5,o1,o4) * D3(i,m,o4,o2,o5,o3)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o2,o3,o1) T2(o2,o3,o1,) * X_(k)(i,m,o2,o3,,o1)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.57
! S2(i,k,m,a)  <--
! (   -0.50000000) D3(m,o3,o4,o1,o5,o2) T2(o5,o4,o2,a) V2(i,o3,k,o1)
! Indices of BareAmp are rotated to match with LHS.
! *** D3(m,o3,o4,o1,o5,o2) T2(o5,o4,o2,a)  is skipped due to the priority
Case 1 ..... X(m,o4,o5,o2,i,k)  <----- (    1.00000000)  D3(m,o3,o4,o1,o5,o2) V2
(i,o3,k,o1)
! Polynomial order is O(o^8)
! Maximum memory usage is O(o^5)
Case 2 ..... X(o5,o4,o2,i,o3,k,o1,a)  <----- (    1.00000000)  T2(o5,o4,o2,a) V2
(i,o3,k,o1)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^6)

! The optimal choice is .....
1: X(m,o4,o5,o2,i,k)  <--  (    1.00000000)  D3(m,o3,o4,o1,o5,o2) V2(i,o3,k,o1)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o5,o4,o2,a) X(m,o4,o5,o2,i,k)

! Scaling       : O(o^8)
! Max size of X : o^5
```

```
! * Begin scaling analysis .... *

for i in {occ}:
  Read V2 from GA for i
  Declare X as a o^5 tensor
  X_(i)(m,o4,o5,o2,k) += 1.0 sum(o3,o1) V2(,o3,k,o1) * D3(m,o3,o4,o1,o5,o2)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o5,o4,o2) T2(o5,o4,o2,) * X_(i)(m,o4,o5,o2,,k)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.58
! S2(i,k,m,a)  <--
! (   -0.50000000) D2(o1,o3,o2,o4) T2(o4,o3,m,a) V2(i,o2,k,o1)
! Indices of BareAmp are rotated to match with LHS.
! *** D2(o1,o3,o2,o4) T2(o4,o3,m,a)  is skipped due to the priority
Case 1 ..... X(o3,o4,i,k)  <----- (    1.00000000)  D2(o1,o3,o2,o4) V2(i,o2,k,o1
)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)
Case 2 ..... X(o4,o3,m,i,o2,k,o1,a)  <----- (    1.00000000)  T2(o4,o3,m,a) V2(i
,o2,k,o1)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^6)

! The optimal choice is .....
1: X(o3,o4,i,k)  <--  (    1.00000000)  D2(o1,o3,o2,o4) V2(i,o2,k,o1)
2: S2(i,k,m,a)  <--  (   -0.50000000) T2(o4,o3,m,a) X(o3,o4,i,k)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for i in {occ}:
  Read V2 from GA for i
  Declare X as a o^3 tensor
  X_(i)(o3,o4,k) += 1.0 sum(o2,o1) V2(,o2,k,o1) * D2(o1,o3,o2,o4)

  for a in {vir}:
    Read S2 from GA for a
    Read T2 from GA for a
    S2_(a)(i,k,m) += -0.5 sum(o4,o3) T2(o4,o3,m,) * X_(i)(o3,o4,,k)

    Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.59
! S2(i,k,m,a)  <--
! (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o3,o1,v1) V2(o2,o5,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o3,o1,v1)  is skipped due to the priority
Case 1 ..... X(i,m,k,o3,o1,o4,a,v1)  <----- (    1.00000000)  D4(i,m,k,o3,o1,o4,
o2,o5) V2(a,v1,o2,o5)
! Polynomial order is O(o^8v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o4,o3,o1,o2,o5,a)  <----- (    1.00000000)  T2(o4,o3,o1,v1) V2(a,
v1,o2,o5)
! Polynomial order is O(o^8v^1)
```



```
! Maximum memory usage is O(o^5)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(o4,o3,o1,o2,o5,a)  <--  (    1.00000000)  T2(o4,o3,o1,v1) V2(a,v1,o2,o5)
2: S2(i,k,m,a)  <--  (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) X(o4,o3,o1,o2,o5,
a)

! Scaling       : O(o^8v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^5 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o4,o3,o1,o2,o5) += 1.0 sum() V2(,v1,o2,o5) * T2(o4,o3,o1,)

  for i in {occ}
    for m in {occ}
      Read D4 from GA for i,m
      S2_(a)(i,k,m) += 1.0 sum(o3,o1,o4,o2,o5) D4(,,k,o3,o1,o4,o2,o5) * X_(a)(o4
,o3,o1,o2,o5,)

      Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.60
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o2,m,v1) V2(o1,o4,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o3,k,o2,o4,o1) T2(o3,o2,m,v1)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o2,a,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
a,v1,o1,o4)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,o2,m,o1,o4,a)  <----- (    1.00000000)  T2(o3,o2,m,v1) V2(a,v1
,o1,o4)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(o3,o2,m,o1,o4,a)  <--  (    1.00000000)  T2(o3,o2,m,v1) V2(a,v1,o1,o4)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,o3,k,o2,o4,o1) X(o3,o2,m,o1,o4,a)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^5 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o3,o2,m,o1,o4) += 1.0 sum() V2(,v1,o1,o4) * T2(o3,o2,m,)

  S2_(a)(i,k,m) += 1.0 sum(o3,o2,o4,o1) D3(i,o3,k,o2,o4,o1) * X_(a)(o3,o2,m,o1,o
4,)
```

```
  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.61
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1) V2(m,o2,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o2,k,o3,o1,o4) T2(o4,o3,o1,v1)  is skipped due to the priority
Case 1 ..... X(i,k,o3,o1,o4,m,a,v1)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4
) V2(a,v1,m,o2)
! Polynomial order is O(o^7v^2)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o4,o3,o1,m,o2,a)  <----- (    1.00000000)  T2(o4,o3,o1,v1) V2(a,v
1,m,o2)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(o4,o3,o1,m,o2,a)  <--  (    1.00000000)  T2(o4,o3,o1,v1) V2(a,v1,m,o2)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,o2,k,o3,o1,o4) X(o4,o3,o1,m,o2,a)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^5 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o4,o3,o1,m,o2) += 1.0 sum() V2(,v1,m,o2) * T2(o4,o3,o1,)

  S2_(a)(i,k,m) += 1.0 sum(o2,o3,o1,o4) D3(i,o2,k,o3,o1,o4) * X_(a)(o4,o3,o1,m,o
2,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.62
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o3,o2,o4,v1) V2(o1,o4,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,m,k,o2,o1,o3) T2(o3,o2,o4,v1)  is skipped due to the priority
Case 1 ..... X(i,m,k,o2,o3,o4,a,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3)
 V2(a,v1,o1,o4)
! Polynomial order is O(o^7v^2)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o3,o2,o1,a)  <----- (    1.00000000)  T2(o3,o2,o4,v1) V2(a,v1,o1,
o4)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o3,o2,o1,a)  <--  (    1.00000000)  T2(o3,o2,o4,v1) V2(a,v1,o1,o4)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,m,k,o2,o1,o3) X(o3,o2,o1,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *
```



```
for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o3,o2,o1) += 1.0 sum(o4) V2(,v1,o1,o4) * T2(o3,o2,o4,)

  S2_(a)(i,k,m) += 1.0 sum(o2,o1,o3) D3(i,m,k,o2,o1,o3) * X_(a)(o3,o2,o1,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.63
! S2(i,k,m,a)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o1,o2,o3,v1) V2(m,o3,a,v1)
! Indices of ERI are rotated to match with LHS.
! *** D2(i,o1,k,o2) T2(o1,o2,o3,v1)  is skipped due to the priority
Case 1 ..... X(i,o1,k,o2,m,o3,a,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) V2(a
,v1,m,o3)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o1,o2,m,a)  <----- (    1.00000000)  T2(o1,o2,o3,v1) V2(a,v1,m,o3
)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o1,o2,m,a)  <--  (    1.00000000)  T2(o1,o2,o3,v1) V2(a,v1,m,o3)
2: S2(i,k,m,a)  <--  (    1.00000000) D2(i,o1,k,o2) X(o1,o2,m,a)

! Scaling       : O(o^4v^2)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o1,o2,m) += 1.0 sum(o3) V2(,v1,m,o3) * T2(o1,o2,o3,)

  S2_(a)(i,k,m) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * X_(a)(o1,o2,m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.64
! S2(i,k,m,a)  <--
! (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o5,o1,v1) V2(o2,v1,o3,a)
! Indices of ERI are rotated to match with LHS.
! *** D4(i,m,k,o3,o1,o4,o2,o5) T2(o4,o5,o1,v1)  is skipped due to the priority
Case 1 ..... X(i,m,k,o1,o4,o5,a,v1)  <----- (    1.00000000)  D4(i,m,k,o3,o1,o4,
o2,o5) V2(a,o3,o2,v1)
! Polynomial order is O(o^8v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o4,o5,o1,o3,o2,a)  <----- (    1.00000000)  T2(o4,o5,o1,v1) V2(a,
o3,o2,v1)
! Polynomial order is O(o^8v^1)
! Maximum memory usage is O(o^5)
```

```
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(o4,o5,o1,o3,o2,a)  <--  (    1.00000000)  T2(o4,o5,o1,v1) V2(a,o3,o2,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D4(i,m,k,o3,o1,o4,o2,o5) X(o4,o5,o1,o3,o2,
a)

! Scaling       : O(o^8v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^5 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o4,o5,o1,o3,o2) += 1.0 sum() V2(,o3,o2,v1) * T2(o4,o5,o1,)

  for i in {occ}
    for m in {occ}
      Read D4 from GA for i,m
      S2_(a)(i,k,m) += 1.0 sum(o3,o1,o4,o2,o5) D4(,,k,o3,o1,o4,o2,o5) * X_(a)(o4
,o5,o1,o3,o2,)

      Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.65
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o3,k,o2,o4,o1) T2(o3,o1,m,v1) V2(o2,a,o4,v1)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o3,k,o2,o4,o1) T2(o3,o1,m,v1)  is skipped due to the priority
Case 1 ..... X(i,o3,k,o1,a,v1)  <----- (    1.00000000)  D3(i,o3,k,o2,o4,o1) V2(
a,o2,o4,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^4)
Case 2 ..... X(o3,o1,m,o2,o4,a)  <----- (    1.00000000)  T2(o3,o1,m,v1) V2(a,o2
,o4,v1)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)
Factorize: Conflict between choices of optimal memory usage and polynomial order
 ...

! The optimal choice is .....
1: X(o3,o1,m,o2,o4,a)  <--  (    1.00000000)  T2(o3,o1,m,v1) V2(a,o2,o4,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,o3,k,o2,o4,o1) X(o3,o1,m,o2,o4,a)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^5 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o3,o1,m,o2,o4) += 1.0 sum() V2(,o2,o4,v1) * T2(o3,o1,m,)

  S2_(a)(i,k,m) += 1.0 sum(o3,o2,o4,o1) D3(i,o3,k,o2,o4,o1) * X_(a)(o3,o1,m,o2,o
4,)
```



```
  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.66
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1) V2(m,v1,o3,a)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,o2,k,o3,o1,o4) T2(o4,o2,o1,v1)  is skipped due to the priority
Case 1 ..... X(i,o2,k,o1,o4,m,a,v1)  <----- (    1.00000000)  D3(i,o2,k,o3,o1,o4
) V2(a,o3,m,v1)
! Polynomial order is O(o^7v^2)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o4,o2,o1,o3,m,a)  <----- (    1.00000000)  T2(o4,o2,o1,v1) V2(a,o
3,m,v1)
! Polynomial order is O(o^7v^1)
! Maximum memory usage is O(o^5)

! The optimal choice is .....
1: X(o4,o2,o1,o3,m,a)  <--  (    1.00000000)  T2(o4,o2,o1,v1) V2(a,o3,m,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,o2,k,o3,o1,o4) X(o4,o2,o1,o3,m,a)

! Scaling       : O(o^7v^1)
! Max size of X : o^5

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^5 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o4,o2,o1,o3,m) += 1.0 sum() V2(,o3,m,v1) * T2(o4,o2,o1,)

  S2_(a)(i,k,m) += 1.0 sum(o2,o3,o1,o4) D3(i,o2,k,o3,o1,o4) * X_(a)(o4,o2,o1,o3,
m,)

  Accumulate S2_(a)(i,k,m) for a


! ---------------------------------------------------------------------
! ---------------------------------------------------------------------

! No.67
! S2(i,k,m,a)  <--
! (    1.00000000) D3(i,m,k,o2,o1,o3) T2(o2,o3,o4,v1) V2(o1,v1,o4,a)
! Indices of ERI are rotated to match with LHS.
! *** D3(i,m,k,o2,o1,o3) T2(o2,o3,o4,v1)  is skipped due to the priority
Case 1 ..... X(i,m,k,o2,o3,o4,a,v1)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3)
 V2(a,o4,o1,v1)
! Polynomial order is O(o^7v^2)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o3,o1,a)  <----- (    1.00000000)  T2(o2,o3,o4,v1) V2(a,o4,o1,
v1)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o3,o1,a)  <--  (    1.00000000)  T2(o2,o3,o4,v1) V2(a,o4,o1,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D3(i,m,k,o2,o1,o3) X(o2,o3,o1,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *
```

```
for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o2,o3,o1) += 1.0 sum(o4) V2(,o4,o1,v1) * T2(o2,o3,o4,)

  S2_(a)(i,k,m) += 1.0 sum(o2,o1,o3) D3(i,m,k,o2,o1,o3) * X_(a)(o2,o3,o1,)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.68
! S2(i,k,m,a)  <--
! (    1.00000000) D2(i,o1,k,o2) T2(o2,o1,o3,v1) V2(m,v1,o3,a)
! Indices of ERI are rotated to match with LHS.
! *** D2(i,o1,k,o2) T2(o2,o1,o3,v1)  is skipped due to the priority
Case 1 ..... X(i,o1,k,o2,o3,m,a,v1)  <----- (    1.00000000)  D2(i,o1,k,o2) V2(a
,o3,m,v1)
! Polynomial order is O(o^6v^2)
! Maximum memory usage is O(o^6)
Case 2 ..... X(o2,o1,m,a)  <----- (    1.00000000)  T2(o2,o1,o3,v1) V2(a,o3,m,v1
)
! Polynomial order is O(o^4v^2)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: X(o2,o1,m,a)  <--  (    1.00000000)  T2(o2,o1,o3,v1) V2(a,o3,m,v1)
2: S2(i,k,m,a)  <--  (    1.00000000) D2(i,o1,k,o2) X(o2,o1,m,a)

! Scaling       : O(o^4v^2)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read V2 from GA for a
  Read S2 from GA for a
  Declare X as a o^3 tensor
  for v1 in {vir}:
    Read T2 from GA for v1
    X_(a)(o2,o1,m) += 1.0 sum(o3) V2(,o3,m,v1) * T2(o2,o1,o3,)

  S2_(a)(i,k,m) += 1.0 sum(o1,o2) D2(i,o1,k,o2) * X_(a)(o2,o1,m,)

  Accumulate S2_(a)(i,k,m) for a


! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.69
! S2(i,k,m,a)  <--
! (    1.00000000) Ecas D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... S2(i,m,k,a)  <----- (    1.00000000)  D3(i,m,k,o2,o1,o3) T2(o3,o2,o
1,a)
! Polynomial order is O(o^6v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: S2(i,m,k,a)  <--  (    1.00000000) Ecas D3(i,m,k,o2,o1,o3) T2(o3,o2,o1,a)

! Scaling       : O(o^6v^1)
! Max size of X : o^3
```



```
! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare S2 as a o^3 tensor
  S2_(a)(i, k, m) += Ecas sum(o2,o1,o3) D3(i,m,k,o2,o1,o3) * T2(o3,o2,o1,)
  Accumulate S2_(a)(i,k,m) for a

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------

! No.70
! S2(i,k,m,a)  <--
! (    1.00000000) Ecas D2(i,o1,k,o2) T2(o1,o2,m,a)
! Indices of BareAmp are rotated to match with LHS.
Case 0 ..... S2(i,k,m,a)  <----- (    1.00000000)  D2(i,o1,k,o2) T2(o1,o2,m,a)
! Polynomial order is O(o^5v^1)
! Maximum memory usage is O(o^3)

! The optimal choice is .....
1: S2(i,k,m,a)  <--  (    1.00000000) Ecas D2(i,o1,k,o2) T2(o1,o2,m,a)

! Scaling       : O(o^5v^1)
! Max size of X : o^3

! * Begin scaling analysis .... *

for a in {vir}:
  Read T2 from GA for a
  Read S2 from GA for a
  Declare S2 as a o^3 tensor
  S2_(a)(i, k, m) += Ecas sum(o1,o2) D2(i,o1,k,o2) * T2(o1,o2,m,)
  Accumulate S2_(a)(i,k,m) for a

! ------------------------------------------------------------------------
! ------------------------------------------------------------------------


### SUMMARY ###
< Calculation of the overlap vector >

* 0 <oovv/oovv>  2 terms are generated ....

* 1 <ooov/ooov>  2 terms are generated ....

< Calculation of the diagonal elements starts >

* 0 L:oovv/R:oovv  31 terms are generated ....

* 1 L:ooov/R:ooov  45 terms are generated ....

< Calculation of the Sigma_{0} += <Psi0| H T2 ER |Psi0> >

* 0 <g/oovv>  1 terms are generated ....

* 1 <g/ooov>  5 terms are generated ....

< Calculation of the Sigma_{aa'}^{ee'} += <Psi0|EL H T0 |Psi0> >

* 0 <oovv/g>  1 terms are generated ....

* 1 <ooov/g>  5 terms are generated ....

< Construction of Sigma_{aa'}^{ee'} += <Psi0|EL H TR ER |Psi0> >

* 0 <oovv/oovv>  36 terms are generated ....
```

```
* 1 <oovv/ooov>  22 terms are generated ....
* 2 <ooov/oovv>  22 terms are generated ....
* 3 <ooov/ooov>  71 terms are generated ....

* Total number of terms : 243
```