Emit output only in the standard output

```
Global parameters for electrons, radiate = T:

C                  67.200074 m          f0               4.461192314 MHz
T0              0.2241553221 musecs     alfa          0.0008829339203
eta            0.000882904907           gamma(tr)        33.65393868
Bcurrent     7.147617982e-13 A/bunch    Kbunch             1
Npart                     1 /bunch      Energy                      3 GeV
gamma             5870.853551           beta             0.9999999855
dtbyds                    0
    U0              0.254202 [MeV/turn]

                                                 M o d e   1         M o d e   2         M o d e   3
Fractional tunes            undamped              0.54473135          0.09300266          0.01229083
                            damped                0.54473135          0.09300266          0.01229083

beta* [m]                   x                0.11192629E+02      0.13357377E-37      0.19146899E-02
                            y                0.23946774E-31      0.59288268E+01      0.31189928E-31
                            t                0.27866856E-01      0.23012832E-29      0.76902873E+00

gamma* [1/m]                px               0.89342106E-01      0.22245805E-39      0.96685946E-07
                            py               0.24240695E-34      0.16866745E+00      0.65026685E-30
                            pt               0.67029625E-08      0.38326312E-31      0.13003062E+01

beta(max) [m]               x                0.17732443E+02      0.66623307E-37      0.63318064E-02
                            y                0.52159844E-31      0.19365831E+02      0.31189947E-31
                            t                0.71609725E-01      0.11478234E-28      0.76902874E+00

gamma(max) [1/m]            px               0.58775140E+01      0.14451015E-37      0.49283364E-05
                            py               0.19829016E-31      0.41245574E+01      0.65984217E-30
                            pt               0.26021594E-01      0.24897013E-29      0.13022468E+01
```

Now possible to get it into a table

```
write, table=summ, file="twisssum.tfs" ;
write, table=emit, file="emittab.tfs" ;
```

```
@ NAME             %04s "EMIT"
@ TYPE             %04s "EMIT"
@ TITLE            %33s "ALBA-24                        "
@ ORIGIN           %16s "5.07.00 Linux 64"
@ DATE             %08s "09/11/21"
@ TIME             %08s "10.41.33"
* PARAMETER          TYPE               UNIT                      MODE1            MODE2            MODE3
$ %s                 %s                 %s                         %le              %le              %le
 "TUNE"             "UNDAMPED"          ""                    0.5447313478     0.09300265867    0.01229083024
 "TUNE"             "DAMPED"            ""                    0.5447313478     0.09300265908    0.01229082599
 "BETA*"            "X"                 "M"                    11.19262867    1.335737659e-38    0.00191468987
 "BETA*"            "Y"                 "M"                   2.39467741e-32       5.928826836   3.118992796e-32
 "BETA*"            "T"                 "M"                    0.02786685589   2.301283218e-30      0.7690287267
 "GAMMA*"           "PX"                "1/M"                  0.08934210616   2.224580512e-40   9.668594592e-08
 "GAMMA*"           "PY"                "1/M"                 2.424069479e-35      0.168667447   6.502668501e-31
 "GAMMA*"           "PT"                "1/M"                 6.702962526e-09    3.83263118e-32       1.300306157
 "BETA_MAX"         "X"                 "M"                    17.73244274   6.662330659e-38    0.00633180641
 "BETA_MAX"         "Y"                 "M"                   5.215984353e-32      19.36583074   3.118994722e-32
 "BETA_MAX"         "T"                 "M"                    0.07160972528   1.147823424e-29      0.7690287403
 "GAMMA_MAX"        "PX"                "1/M"                  5.877513981   1.445101479e-38   4.928336375e-06
 "GAMMA_MAX"        "PY"                "1/M"                 1.982901602e-32      4.124557395   6.59842173e-31
 "GAMMA_MAX"        "PT"                "1/M"                    0.026021594   2.489701297e-30      1.302246774
 "DAMPING_PARTION"  ""                  ""                       1.495332757      1.000000321      1.504673443
 "DAMPING_CONSTANT" ""                  "1/S"                    282.6293411      189.0077178      284.3948021
 "DAMPING_TIME"     ""                  "S"                   0.003538203062   0.005290789241   0.003516238667
 "EMITTANCE"        ""                  "PI_M"                1.125932593e-09   5.233196536e-38   9.569042029e-07
```

```
*                 U0                 EX                EXN                EY                EYN                ET              SIGT              SIGE                QS
$                %le                %le                %le               %le               %le               %le               %le               %le               %le
    0.0002542024335    1.125932593e-09    6.610185267e-06    5.233196536e-38    3.072333002e-34    9.569042029e-07    0.0008578397149     0.001115467806      0.01229083024
```

Spin

```
ptc_setswitch, debuglevel=3, exact_mis=true, time=true, totalpath=false, spin=true;
```

- Piotr has connected spin from PTC to MAD-X
- Output is at the moment only the standard output
- In a special branch: ptc_spin

```
 539 L26                   193.588460
>L26:12                <
Ref Momentum        1.500000 GeV/c
 Orbital phase advances
   14.25058496298344        8.196877463912600       0.6693693212120935E-17
 Spin phase advance
   3.404074260541626
 damping advance
  0.7771561172376135E-15  -0.5440092820663263E-14  -0.2109423746787797E-14
  L,N,M vector from q_u=u : no need for canonise
  L
   1.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000

   0.000000000000000      -0.7060242418348952E-17  -0.1020701521212475E-17   -9.145758547248017       -26.06815066814644       0.1239003060285649E-14  -0.7966115273429349E-
14
   0.000000000000000      -0.2965601612071989E-04   -4.325170357347178      -0.9304016636726571E-14  -0.3572852393086685E-13  -0.2155085851107685E-04    67.95429589367913

  spin N vector, and 1st order derivatives
   0.000000000000000       0.7060242418348952E-17   0.1020701521212475E-17    9.145758547248017        26.06815066814644      -0.1239003060285649E-14   0.7966115273429349E-
14
   1.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000

   0.000000000000000       0.1922801442627204E-17   0.6268783417800944E-16   0.1092779267821573       24.12306840844820       0.3245497636429551E-14  -0.4702573522138443E-
14
  M
   0.000000000000000       0.2965601612071989E-04    4.325170357347178       0.9304016636726571E-14   0.3572852393086685E-13   0.2155085851107685E-04   -67.95429589367913

   0.000000000000000      -0.1922801442627204E-17  -0.6268783417800944E-16  -0.1092779267821573       -24.12306840844820      -0.3245497636429551E-14   0.4702573522138443E-
14
   1.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000        0.000000000000000

L26                    194.0454
Delta E   1.0000000
idxes          1        5        9
betas raw        11.8504      5.9856     16.4945
betas w/ener     11.8504      5.9856     16.4945
dispersions       0.0012      0.0000     -0.0000      0.0000
phase adv.        0.0000      0.0000      0.0000
orbit transv.     0.0000      0.0000      0.0000      0.0000
dp/p, T           0.0000      0.1499
```

Many small issues and have been fixed and requests implemented

- E.g. Npart beam-beam, bug in plotting
- A special thanks to some external collaborators that have been helpful in debugging and proposing solutions:
  - J. Scott Berg, T. Glässle, Y. Levinsen