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                  Updates for SOFA Release 13 : 2017 April 20
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Summary of Changes

The changes fall into the following categories:

1. Implementation of the IAU 2012 definition of the astronomical
   unit (au). Not only has this constant been updated, but also
   (a) all derived quantities are evaluated via the appropriate
       formulas, and
   (b) all documentation now uses the appropriate symbols for the
       unit, for example, 1 au and 2.3 au/day.

2. Update to PVSTAR to make it consistent with the version of STARPV
   that was updated in the previous release.

3. Other minor typographical corrections to various routines.

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FORTRAN Library
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1. iau_APCS   The IAU 2012 value of the astronomical unit (au) is
   iau_LDN   now implemented in these six routines.
   iau_PMPX
   iau_PVSTAR
   iau_STARPM
   iau_STARPV

2. iau_PVSTAR   An expression (sqrt(1-x)-1), where x is usually tiny,
                  has been replaced with (-x/(sqrt(1-x)+1) to improve
                  numerical precision.

3. t_sofa_f   Check values in this validation program updated due
                  to the change in the astronomical unit.

4. sofa_ast_f   The SOFA Astrometry Tools cookbook.
                  (a) In the table on page 22 there is a change of
                      +1 x 10^-7 seconds in RA for three results when
                      compared to using the previous value for the au.
                      These cases are repeated on the next 2 pages.
                  (b) The listing of the relativistic version of the
                      routine iau_PMPX in the Appendix has been updated
                      on page 77 with the required changes for the au.

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ANSI C Library
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1. sofam.h   The astronomical unit (au) has been updated in this
                  include file and all constants that are derived from
                  the au have been replaced by the appropriate formulas.

2. iauPvstar   An expression (sqrt(1-x)-1), where x is usually tiny,
                  has been replaced with (-x/(sqrt(1-x)+1) to improve
                  numerical precision.

3. t_sofa_c   Check values in this validation program updated due
                  to the change in the astronomical unit.

4. sofa_ast_c   The SOFA Astrometry Tools cookbook. In the table on
                  page 20 there is a change of +1 x 10^-7 seconds in RA
                  for three results when compared to using the previous
                  value for the au. These cases are repeated on the
                  next three pages.

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End of Updates
2017 March 22