

Using the P03 precession model

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Abstract. We discuss aspects of using the P03 precession model.

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The IAU 2000 precession model comprised the existing Lieske *et al.* (1977) model plus rate corrections.

Though a good fit to existing VLBI observations, the IUA 2000 model model is not consistent with dynamical theory, and so the IAU Working Group on precession and the ecliptic recommended (Hilton *et al.* 2006) that it be replaced by the 'P03' model of Capitaine *et al.* (2003).

P03 provides improved models for both the equator and the ecliptic, and also includes parameterized provision for future adjustment to match new determinations of properties of the non-rigid Earth.

Practical use of the new model involves choices, and various ways have been studied (Capitaine & Wallace 2006) of generating the directions of the celestial intermediate pole and origin (CIP, CIO), from which the usual rotation matrices can be obtained.

From a wide range of possible procedures we have selected two that target different classes of application, typified by the SOFA software and the IERS Conventions respectively.

These procedures achieve a high standard of consistency, both internal and mutual, as well as being efficient and versatile. One is based on the Fukushima-Williams precession-nutation angles, the other on series for the CIP coordinates.

Both use the CIO locator s , and both deliver the full range of products, supporting classical equinox/GST methods in addition to the CIO/ERA 'new paradigm'.

References

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