



## **The comparison of methods and results by IGN and DGFI in the realization of ITRF2005**

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As two of the IERS Combination Center, IGN and DGFI, both of them have computed the ITRF2005 solutions, which are called ITRF2005 and ITRF2005-P respectively. From the point of theory, if the input data and processing procedure are the same, the identical solution will be obtained. However, as a consequence of different combination strategy, the ITRF2005 and ITRF2005-P solutions show difference in their final results, especially in the aspect of scales. The ITRF2005 reveals apparent differences in VLBI and SLR, but the ITRF2005-P doesn't show such differences. In this presentation, firstly we compare the major differences of combination strategy and the results between IGN and DGFI. Furthermore, during the combination of different techniques, the normal equation is singular because there is a rank deficiency corresponding to some of the 14 TRF datum parameters (3 translations, 1 scale factor, 3 rotations and their corresponding rates). DGFI has recommended (1) to remove the rank deficiencies with applying minimum constraints at observation level; (2) to apply the loose constraints for regularization. Here the determination of the optimal regularization parameter  $\lambda$  by A-optimal design (minimizing the trace of the Mean Square Error matrix MSE) is studied with respect to the observation weight, and corresponding solutions are given.