

Analysis and Evaluation of the CERN Geodetic Reference System

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Using the currently available data a new set of topocentric datum parameters have been determined to re-establish the CERN Geodetic Reference Frame (CGRF). A new set of transformation parameters linking the CGRF to the ITRF97 (epoch 98.5) have also been established, minimizing any misalignments between them. This work will be presented, together with the additional steps that will be required to refine these parameters, and to develop a CERN geoid model, for the FCC.

Measurements carried out to link the CERN reference systems to a global network for the CNGS project identified misalignments in the CGRF with respect to a global International Terrestrial Reference Frame. My new studies have also shown misalignments between the CERN geoid model CG2000 and the Swiss geoid model CHGEO98 from which it is derived. The FCC will cover an area more than 10 times larger than the current installations, and the current reference systems would have to be extended. The differences caused by such misalignments will therefore become more significant across the new FCC site.

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