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## **Constraining Least Squares VLBI Solutions**

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In a traditional least squares adjustment of parameters to the VLBI observation, typically tropospheric as well as clock parameters are determined in form of continuous piece-wise linear functions (CPWLF) with a given temporal resolution. As the VLBI observations are not equidistant, and on the contrary, exhibit gaps of sometimes several hours, singularities arise due to unresolvable parameters inside these gaps. This issue as well as the geometric datum deficiency require additional information to determine the VLBI target parameters, e.g, Earth orientation parameters, as well as the celestial and terrestrial reference frames. For this reason, it is necessary to constrain the respective parameters in the solution.

In this paper we analyze the singularities which arise within the geodetic VLBI data analysis and show the ramifications of traditional constraining. Furthermore, we give suggestions to optimize the least squares solution with regard to constraining the VLBI solution. The effects of various approaches are validated by the analysis of continuous VLBI campaigns.

Primary author: Dr ARTZ, Thomas (Institute of Geodesy and Geoinformation, University of Bonn)

Co-authors: Mr IDDINK, Andreas (Institute of Geodesy and Geoinformation, University of Bonn); NOTH-NAGEL, Axel (Institute of Geodesy and Geoinformation, University of Bonn); Mrs TEGTMEIER, Corinna (Institute of Geodesy and Geoinformation, University of Bonn); Mr HALSIG, Sebastian (Institute of Geodesy and Geoinformation, University of Bonn)

Presenter: Dr ARTZ, Thomas (Institute of Geodesy and Geoinformation, University of Bonn)

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