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Investigation of the relationship between sensitivity level of the sources and the internal reliability value of VLBI observations during CONT14

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The quality of geodetic networks can be determined with the sensitivity and the internal reliability magnitudes when the mathematical model established for the network adjustment is questioned. Internal reliability is used for controlling an observation with the help of the other observations in the network and describes the magnitude of the undetectable gross errors by using hypothesis testing. The sensitivity level is explained as the minimum value of the undetectable gross error in the adjusted coordinate differences. In VLBI the observed sources are of major importance for the quality of the observations. In this study, it is investigated how the sensitivity levels of the sources impact the internal reliability of the observations during the continuous VLBI campaign CONT14. It is aimed to detect the poor sources and their effects statistically in the VLBI data analysis. If the sources having worst sensitivity value such as 0506-612, 3C454.3, NRAO150, and 3C345 have been excluded, the internal reliability values of the observations get better. For the rest of the sources the sensitivity distributions have been obtained as better. It can be concluded that the source structure might be significant for the quality of the observations.