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Precise VLBI/GNSS ties with micro-VLBI

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Abstract. Precise measurement of ties between space geodesy techniques is critically important for a technique inter-comparison and for gaining benefits of collocation of several techniques at one site. It turned out challenging to provide such measurements with a millimeter level if accuracy using conventional surveys. To overcome these challenges, we propose an innovative technique. We opened the cover of a GNSS receiver and put a splitter in the signal chain from the antenna. While the antenna processes GNSS signal in a normal way, we digitize the copy of the raw antenna signal within 1 to 2 GHz bandwidth, reformat it, and then process the digitized signal from a GNSS antenna and a signal from a collocated radiotelescope using a conventional way of processing VLBI data. We are effectively transforming a GNSS receiver into a micro-VLBI site. We will discuss advantages of this approach for precise tie measurements and discuss early results of the observational field campaigns.