The research on the effect of LHCP antenna's central beam direction on GNSS-R DDM's SNR around specular

Junming Xia (1,2), Weihua Bai (1,2), Yueqiang Sun (1,2), Qifei Du (1,2), Xianyi Wang (1,2)
(1) National Space Science Center, Chinese Academy of Sciences, (2) Beijing Key Laboratory of Space Environment Exploration

GNSS are constellations of satellites designed to provide position, velocity and timing information for use on Earth and in space. Since Global navigation satellite system (GNSS) signals were not designed for remote sensing, GNSS reflectometry (GNSS-R) signals are so weak, especially for space borne GNSS-R receiver cases, which limit its application. To achieve higher SNR GNSS-R signals, this thesis analyzed the effect of GNSS reflected antenna's central beam direction on the ocean reflected signal's SNR around specular utilizing GREEPS simulator, taking the first Chinese space-bore GNSS-R payload GNOS [U+2161] and GPS satellite as an example. It was found that the available maximum specular SNR varied when reflected antenna's central beam direction was changed. The available maximum SNR was the greatest when reflected antenna's central beam direction was 26°and the addition SNR compared with the case with reflected antenna's central beam direction being 0°was more than 3 dB.