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A Study of Constellation Design for Microwave and Infrared Occultation Mission

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The GNSS (Global Navigation Satellite System) radio occultation technique has been proved since the GPS/MET in 1995. A mount of data has been provided by many missions for weather forecast, climate model and space weather research. As a further promotion, the occultation technique between Low Earth Orbit (LEO) satellites were proposed. More and more attention has been paid recently. Sounding by microwave and Infrared occultation between LEO-LEO, profiles of temperature, water vapor, liquid water, CO_2, O_3 etc. in high vertical resolution can be obtained independently. To facilitate the operational capability for weather forecast, different constellation designs were simulated in this paper and the distribution in space and time were calculated to ensure the desired level of performance. And the potential way to retrieve water vapor and liquid water was also studied.