

MULTIBAND REFLECTIVE POLARIZATION CONVERTER USING METASURFACE

Metasurfaces are composed of artificial engineered periodic resonant structures which have the ability to alter the amplitude, frequency, phase and polarization of the incident electromagnetic wave. Several challenges occur to establish communication links, few of them would be atmospheric mismatches, reflection effects and polarization mismatches etc. Polarization mismatching occurs due to differences in polarizations of transmitting and receiving antennas. To overcome this circular polarized antennas can be used. However, designing circular polarized antennas requires complex feeding techniques which may not be feasible. Metasurface possesses the ability to control the polarization of an EM wave, metasurface can be integrated along with the antenna, to alter polarization of the antenna. Therefore by using metasurface as a superstrate it facilitates the conversion of linear polarization to circular polarization which overcomes the challenges of polarization mismatching faced in communication links. In this work we are designing a metasurface which can convert the polarization of the linearly incident EM wave into circular polarization during the reflection phase. In our work we design a polarization converter which can operate between 4-8GHz and also design an antenna which can operate in 5G and analyze its polarization conversion ability without altering the feeding techniques. Moreover we also study the impact of the metasurface in terms of other characteristics of an antenna.



R S S S SNIGDHA (BU21EECE0100200)

KOTA SAI PRADYUMNA MAHADEV (BU21EECE0100097)

MOHAMMMAD AKRAM (BU21EECE0100083)