

The effects of DC electric fields for electromagnetic wave transmission through an antiferromagnet plate in Voigt geometry

G.G. Levchenko,¹ A.S. Savchenko,¹ A.S. Tarasenko,¹ S.V. Tarasenko,¹ and V.G. Shavrov²

¹*Donetsk Institute for Physics and Engineering of the National Academy of Sciences of Ukraine, 83114, Donetsk, Ukraine*

²*Kotel'nikov Institute of Radio Engineering and Electronics of the Russian Academy of Sciences, 125009, Moscow, Russia*

The designing of the tunable electromagnetic metasurface on the base of magnetic materials is the one of important directions of the modern metamaterials physics. In this connection, in our report we present the results of research of the relation between the topological characteristics of a refraction surface and the characteristics of the transmission of a TM or TE bulk electromagnetic wave through a transparent half-wave antiferromagnet plate in crossed DC magnetic and electric fields. It was shown that the conditions for resonant transmission correspond to the spectrum of escaping bulk magnetic polaritons of the layer as well as the spectrum of electromagnetic waves in the plate with extreme values of the surface impedance.