

DISPERSION PROPERTIES
OF THE MAGNETOACTIVE DUSTY
PLASMA WITH FERROMAGNETIC GRAINS

*V.M. Mal'nev, Eu. V. Martysh, V. V. Pan'kiv,
S. V. Koshevaya¹, A.N. Kotsarenko²*

Taras Shevchenko Kyiv National University
(Kyiv 01033, Ukraine;
e-mail: malnev@i.com.ua, emart@univ.kiev.ua),

¹Autonomous University of Morelos
(Cuernavaca 62210, Morelos, Mexico;
e-mail: svetlana@uaem.mx),

²UNICIT, UNAM
(Queretaro, Mexico)

S u m m a r y

The paper is devoted to the analysis of the dispersion properties of a dusty plasma with ferromagnetic grains in strong constant external magnetic fields. The dispersion of the magnetic permeability of this system is related to small vibrations of the magnetic dipole moments of grains around the force lines of the magnetic field. The numeric evaluations for the realistic parameters of this dusty plasma show that, in a very narrow band of frequencies in the HF range, the dielectric permittivity and magnetic permeability of the system may be negative simultaneously. This allows us to consider such a plasma as the left-handed medium in this frequency band.