

ECEn 560
Electromagnetic Wave Theory

Homework #4

Due Jan. 19, 2016 in class (may be turned in late for half credit)

1. (a) What is the physical meaning of the eigenvectors associated with a gyrotropic medium?
(b) Briefly explain Faraday rotation.
2. Find an expression for the width of a gyrotropic slab required to rotate the angle of a linearly polarized incident wave by 90 degrees. Evaluate this length for reasonable ferrite parameter values (for typical parameter values, see Pozar, Microwave Engineering, 3rd Edition, Example 9.1, p. 457).
3. Briefly explain the difference between Faraday rotation and optical activity.