

HW 5 – Fields in Matter

Due October 2, 2009, 5 pm

These problems will help you explore how the electric field affects matter. You'll get a sense of how atoms react to electric fields, how the concept of bound charge is defined, and how the electric, displacement, and polarization fields are related.

All problems are from Griffiths, Chapter 4.

1. Problem 4.1 (p. 163). The dielectric breakdown of air happens at about 3 kV/mm. How does this compare with your answer?

2. Problem 4.7 (p. 165).

3. Problem 4.10 (p. 169).

4. Problem 4.11 (p. 170).

5. Problem 4.15 (p. 177).

6. Problem 4.17 (p. 179).