

HW5

MTLE-6120: Spring 2017

Due: Apr 6, 2017

1. **Kasap 7.20: Capacitor design**

2. **Kasap 8.6: Ferromagnetism and the exchange interaction**

Note that there are effectively three parts to this question, as listed below for clarity:

- (a) What is the spin magnetic moment of the isolated Dy atom based on its electronic configuration?
- (b) What is the magnetic moment per Dy atom in the solid based on the saturation magnetization? Compare with (a).
- (c) Estimate the exchange interaction magnitude given the Curie temperature.

3. **Kasap 8.17: Superconductivity and critical current density**