

Problem Set 2 - Magnetism & Spintronics

ELEG/PHYS667

University of Delaware
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Due: Monday, Mar 6, 2006 in class

1. Show that the first-order expansion of

$$L(\alpha) = \coth(\alpha) - \frac{1}{\alpha} \quad (1)$$

is

$$L(\alpha) \approx \frac{\alpha}{3}. \quad (2)$$

2. If the magnetic field near the surface of a permanent magnet is given by

$$H(x) = A(x + x_0)^{-2}, \quad (3)$$

what is the height a 0.01g diamagnet with $\chi = -4 \times 10^{-4}$ (pyrolytic graphite) will levitate above it?