

Physics 4410 - Quantum Mechanics II – Fall 2004
Problem Set 12

Due November 24, 2004 at 11:00 AM in Duane G2B21

NOTICE: Final exam will be Monday, December 13, 1:30-4:00pm,
in room **G1B30**.

Reading assignment: Shankar Chapter 19.

1. Shankar 19.3.1 (there's a typo in 2nd edition: should be $r_0 = 1/\mu_0$.)
2. Shankar 19.3.2
3. Shankar 19.5.1
4. Shankar 19.5.3
5. Consider scattering off a spherical shell:

$$V(r) = a\delta(r - r_0).$$

The scattering is at low energy ($kr_0 \ll 1$), so only the s -wave component is important.

- a) Calculate $d\sigma(\theta)/d\Omega$.
- b) Calculate σ .