

Homework 1

AST 422 Spring 2007

- (a) Assume power, $P(z)$ (= Luminosity, $L(z)$), and density $\rho(z)$ are all constant.
- Show for the Euclidian case: $N(> S) \propto S^{-3/2}$
where S = flux.
 - Discuss what will change if your assumptions don't hold?
- (b) Compute the Sky Brightness (in Radio). Integrate!!
- Assume $N(> S) \propto S^{-\gamma}$. For which values of γ the sky brightness is infinite (or finite).
This is called the *Olbers' Paradox*.
- (c) Using the same assumptions as in part (a):
- Show for the Euclidian case: $N(< m) \propto 10^{0.6m}$
where, m = magnitude.
 - For $N(< m) \propto 10^{\alpha m}$, which values of α will cause the Olber's Paradox.
 - Discuss about what you can conclude from the assumptions we made.