

UNIVERSITY OF CALIFORNIA, SANTA BARBARA
Department of Physics

Physics 221A

Quantum Field Theory

Fall 2007

Prof: Joe Polchinski

joep@kitp.ucsb.edu

Office hours: Kohn 2319, Th 3:30-4:30 (or email/see me after class to set up a time)

TA: Jorge Rocha

Office hours: TBA.

Course web page: <http://www.kitp.ucsb.edu/~joep/Web221A/221A.html>

ASSIGNMENT #1

Due: Friday, Oct. 5, 5pm in TA's mailbox (5th floor Broida). See course web page for late homework policy.

1. Srednicki 1.2. Note again that his $a(\mathbf{x})$ is my $\hat{\chi}(\mathbf{x})$. Also, after working this exercise, obtain the Heisenberg equation of motion for $\hat{\chi}(t, \mathbf{x})$.

2. Srednicki 3.1.

3. Srednicki 3.5. It may seem odd to treat φ and φ^* as independent variables, but you get exactly the same result if you simply write $\varphi = (\varphi_1 + i\varphi_2)/\sqrt{2}$ in terms of two real fields and quantize these.