Physics 556 Spring 2004
Typographical Corrections for Doniach and Sondheimer's book

Unfortunately, when Imperial College Press reprinted this book, they used the original Benjamin/Addison-Wesley type with no corrections of errors, which are moderately numerous and occasionally quite annoying. Here I try to correct some of the worst.

1. **Chapter 1**

   a. Middle of p.4. "... any solution u_i must be of the form ..." should be replaced by "... the solution u_i can be chosen in the form ..."

   b. Between eq. 1.1.8 and 1.1.9 there is an unnumbered equation whose error propagates to the next equation. The offending equation should be

   $$\ddot{\xi}_k + \Omega_0^2 \xi_k = -\lambda \xi_k \sum_j D_{ij} e^{i\vec{k}\cdot(\vec{R}_j - \vec{R}_i)}.$$

   Now erase the left side of the equation 1.1.9. You are left with a middle and right hand side which are correct and equal.

2. **Chapter 2**

   a. Near the top of p.32, the phrase "modes k and $-k$ are not ..." should be replaced by "mode amplitudes Q_k and Q_{-k} are not ..."

   b. Same page, eqs. 2.1.13, should read

   $$b_k = \frac{1}{\sqrt{2\Omega_k}}(\Omega_k Q_k + i P_k)$$

   and (the Hermitean conjugate version)

   $$b_k^\dagger = \frac{1}{\sqrt{2\Omega_k}}(\Omega_k Q_{-k} - i P_{-k})$$

   c. While we're at it, this is not a typo, just an omission that you might want to write in here, namely the inverse equations to 2.1.13,

   $$Q_k = \sqrt{\frac{\hbar}{2\Omega_k}}(b_k + b_{-k}^\dagger)$$

   and

   $$P_k = \sqrt{\frac{\hbar\Omega_k}{2}}\frac{1}{i}(b_k - b_{-k}^\dagger)$$

   I put $\hbar$ back into these equations just for possible reference. D&S use $\hbar = 1$ which I think is not a big help. The commutator 2.1.12 then needs a factor $\hbar$ on the right.