

Homework 6 due in class on 04/11

In your write-ups, please provide clear explanations of the models chosen, of the equations used, and of the findings, with figures where necessary.

1. Consider the example in class with the analysis of diamond ore. Re-evaluate this problem under the following conditions: The measurements are the same, but this time the measurement uncertainty is as follows: The mass of the first diamond is estimated to be $\mu_1 = 10 \pm 20$ g. The mass of the second diamond is estimated to be $\mu_2 = 50 \pm 5$ g. The new experiment shows that the combined massed are $\delta = 80 \pm 10$ g. What type of distributions should you assume for the prior and data in this case? What is the shape of the posterior joint pdf for μ_1 and μ_2 ? Which diamond's mass has been more constrained by the experiment measuring their combined mass?
2. Revisit problem 2b of HW 3. How sensitive is the solution to the prior value of m , and to the uncertainty in this prior? How does the sensitivity of the solution to the prior information relate to the degree of ill-posedness of the problem being solved?
3. Aster, 11.4