Questions for discussion, Nuclear Lunch, March 22, 2017

Paper: Manohar et al., "How Bright is the Proton? A Prescise Determination of the Photon Parton Distribution Function", Phys. Rev. Lett. 117, 242002 (2016).

1. What is deep inelastic scattering? What is a photon-induced cross section? What is W/Z fusion? Shiv
2. In Figure 1, why is the white region inaccessible at leading order QED? Sudhanva
3. What are current quark and constituent quark masses? Bishnu
4. From the first figure of the presentation: What is $xf_{\gamma/p}(x,\mu^2)$? Why is it necessary to multiply $f_{\gamma/p}$ by x? Why is the probability function value for gluons more than 1 for small values of x? Taya
5. In Figure 4, why is there a large uncertainty for larger values of x? Mongi
6. What is a QED β function? What is the purpose of calculating it? Doug
7. If QCD were added to the calculation, would the cross-section calculation change? Rekam
8. What is meant by diphoton excess? Abinash
9. Why are the authors referring to a resonance term in this assumed process? Nadyah
10. How is the LHC data used to constrain the photon distribution in the NNFDF model? Som
11. Are there other alternative explanations for this work that would not require solutions beyond the standard model? Matt
12. What is an infinite momentum frame? Andrea
13. What is the difference between twist and order or higher twist and higher order? Gula