Questions about direct photons (part 1)

1. What is the difference between the following terms: direct photons, prompt photons, isolated photons?

2. Why are direct photons in p+p a useful tool to study the gluon distribution in the proton?

3. What is the problem in using direct photon data in global QCD fits for determination of the gluon pdf?

4. What are isolation cuts? Why are they used? Can they be used at low $p_T$?

5. What is meant by „$k_T$ broadening“? What is its effects on direct photon $p_T$ spectra?

6. What can one do to distinguish single photon showers in calorimeters from showers resulting from the overlap of the two decay photons of a neutral pion?

7. What are the motivations for studying direct photons in A+A collisions?

8. What are photons from „jet-plasma interactions“?

9. What is the „double ratio“ used in the statistical subtraction method?

10. What are the advantages and disadvantages in using external conversion to measure photons compared to calorimeter measurements?
1. What is meant by „shadowing“ and „anti-shadowing“?

2. What are possible reasons to expect the direct-photon $R_{AA}$ at high $p_T$ to be below unity?

3. What are the advantages and disadvantages of the internal conversion method in comparison with methods based on real photons?

4. How big is the direct-photon excess in min. bias Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV?

5. What is the exponential slope of the low-$p_T$ direct photon excess above the scaled p+p reference? What does this slope suggest about the time at which these photons are produced?

6. In Au+Au collisions at RHIC at low $p_T$ the direct-photon $v_2$ is similar to the $v_2$ of pions. Why is this somewhat puzzling?