

Questions for the discussion

1. Predictivity of QCD heavily relies on leading-power factorisation:

- What is meant by “leading-power”?
- Do all processes factorise in QCD?
- If not, what prevents factorisation from happening?

2. Can you say why the solution of the DGLAP equation resums terms like $\alpha_s^n \ln^m(\mu/\mu_0)$ with $m \leq n$.

3. In slide 25, can you show that $H^{[n,k]}$ for $k \neq 0$ can be written in terms of $H^{[m<n,0]}$ and the the DGLAP splitting kernels $P^{[m<n]}$? Try it at one loop ($n = 1$).

4. Can you think about another example of resummation even more fundamental than the DGLAP evolution? Hint: consider the strong coupling.

5. The Landau pole signals an actual divergence of the strong coupling or it is an artefact of perturbation theory? Motivate your answer.