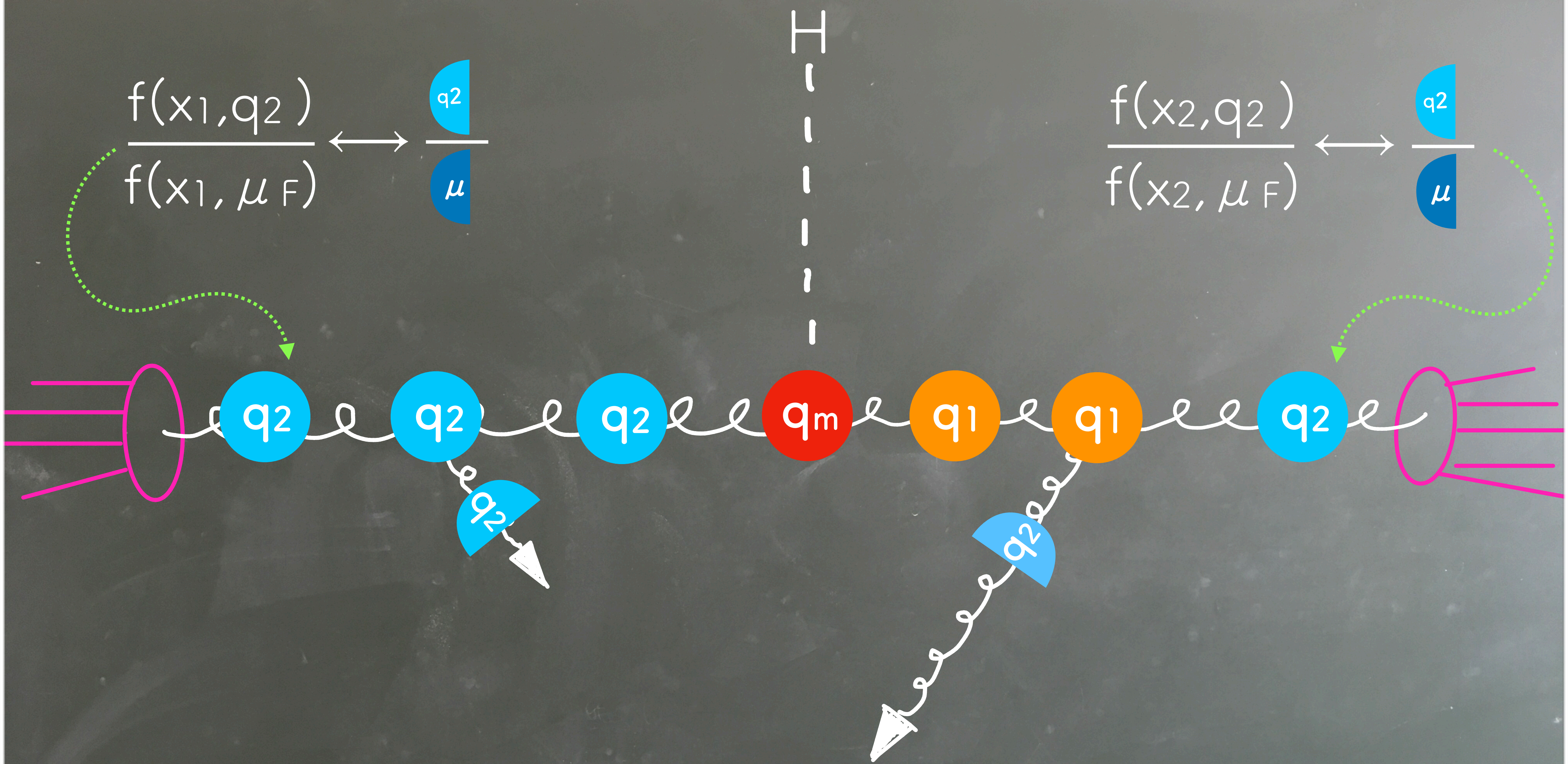
Example: H+2 jets MiNLO at leading order with a broad brush



- Parton shower also effectively sets the PDFs for such a configuration to the scale beneath which all activity is integrated out, $q_2 \cdots$

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$$\underbrace{d\sigma^{LO}_{HJJ} = dx_1 dx_2 d\Phi_{HJJ}\, f_{h_1}(x_1,\mu_F)\, f_{h_2}(x_2,\mu_F)\, \frac{1}{2\hat{s}}\, M(\Phi_{HJJ},\mu_R)}_{}$$

LO terms $\simeq O(\alpha_s^4)$

$$d\sigma^{P.S.}_{HJJ} = \overbrace{dx_1 dx_2 d\Phi_{HJJ}\, f_{h_1}(x_1,\mu_F)\, f_{h_2}(x_2,\mu_F)\, \frac{1}{2\hat{s}}\, M^{P.S.}(\Phi_{HJJ})}$$

$$\left.\begin{aligned}
&\times \frac{\alpha_s(q_2)}{\alpha_s(\mu)} \cdot \frac{\alpha_s(q_1)}{\alpha_s(\mu)} \cdot \frac{\alpha_s^2(q_m)}{\alpha_s^2(\mu)}\\
&\times \frac{\Delta_g(q_m;q_2)}{\Delta_g(q_2;q_2)} \cdot \cdots\cdots \cdot \frac{\Delta_g(q_1;q_2)}{\Delta_g(q_2;q_2)}\\
&\times \frac{f(x_1,q_2)}{f(x_1,\mu_F)} \cdot \frac{f(x_2,q_2)}{f(x_2,\mu_F)}
\end{aligned}\right\}$$

Beyond LO corrections

$\sim 1 + O(\alpha_s) + \ldots$

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$$d\sigma^{LO}_{HJJ} = \underbrace{dx_1\, dx_2\, d\Phi_{HJJ}\, f_{h_1}(x_1,\mu_F)\, f_{h_2}(x_2,\mu_F)\, \frac{1}{2\hat{s}}\, M(\Phi_{HJJ},\mu_R)}_{\text{LO terms} \simeq O(\alpha_s^4)}$$

$$d\sigma^{P.S.}_{HJJ} = \overbrace{dx_1\, dx_2\, d\Phi_{HJJ}\, f_{h_1}(x_1,\mu_F)\, f_{h_2}(x_2,\mu_F)\, \frac{1}{2\hat{s}}\, M^{P.S.}(\Phi_{HJJ})}$$

$$\left.\begin{array}{l} \times\ \dfrac{\alpha_s(q_2)}{\alpha_s(\mu)} \cdot \dfrac{\alpha_s(q_1)}{\alpha_s(\mu)} \cdot \dfrac{\alpha_s^2(q_m)}{\alpha_s^2(\mu)} \\[2ex] \times\ \dfrac{\Delta_g(q_m\,;\,q_2)}{\Delta_g(q_2\,;\,q_2)} \cdot \cdots\cdots \cdot \dfrac{\Delta_g(q_1\,;\,q_2)}{\Delta_g(q_2\,;\,q_2)} \\[2ex] \times\ \dfrac{f(x_1,q_2)}{f(x_1,\mu_F)} \cdot \dfrac{f(x_2,q_2)}{f(x_2,\mu_F)} \end{array}\right\} = \boxed{\dfrac{d\sigma^{P.S.}_{HJJ}}{\left[d\sigma^{P.S.}_{HJJ}\right]_{LO}}}$$

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$$d\sigma^{LO}_{HJJ} = \underbrace{dx_1\, dx_2\, d\Phi_{HJJ}\, f_{h_1}(x_1,\mu_F)\, f_{h_2}(x_2,\mu_F)\, \frac{1}{2\hat{s}}\, M(\Phi_{HJJ},\mu_R)}_{\text{LO terms} \simeq O(\alpha_s^4)}$$

$$d\sigma^{P.S.}_{HJJ} = \overbrace{dx_1\, dx_2\, d\Phi_{HJJ}\, f_{h_1}(x_1,\mu_F)\, f_{h_2}(x_2,\mu_F)\, \frac{1}{2\hat{s}}\, M^{P.S.}(\Phi_{HJJ})}$$

$$\left.\begin{aligned}
&\times \frac{\alpha_s(q_2)}{\alpha_s(\mu)} \cdot \frac{\alpha_s(q_1)}{\alpha_s(\mu)} \cdot \frac{\alpha_s^2(q_m)}{\alpha_s^2(\mu)} \\
&\times \frac{\Delta_g(q_m\,;\,q_2)}{\Delta_g(q_2\,;\,q_2)} \cdot \ldots\ldots \cdot \frac{\Delta_g(q_1\,;\,q_2)}{\Delta_g(q_2\,;\,q_2)} \\
&\times \frac{f(x_1,q_2)}{f(x_1,\mu_F)} \cdot \frac{f(x_2,q_2)}{f(x_2,\mu_F)}
\end{aligned}\right\}$$

Idea of MiNLO is to carry all these higher order corr^{n}s over to the fixed order calc^{n}

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$$d\sigma^{LO}_{HJJ} = dx_1\, dx_2\, d\Phi_{HJJ}\, f_{h_1}(x_1,\mu_F)\, f_{h_2}(x_2,\mu_F)\, \frac{1}{2\hat{s}}\, M(\Phi_{HJJ},\mu_R)$$

$$d\sigma^{MiLO}_{HJJ} \equiv d\sigma^{LO}_{HJJ} \times \frac{d\sigma^{P.S.}_{HJJ}}{\left[d\sigma^{P.S.}_{HJJ}\right]_{LO}}$$

$$\frac{\alpha_S(q_2)}{\alpha_S(\mu)} \cdot \frac{\alpha_S(q_1)}{\alpha_S(\mu)} \cdot \frac{\alpha_S^2(q_m)}{\alpha_S^2(\mu)}$$

$$= d\sigma^{LO}_{HJJ} \times \frac{\Delta_g(q_m\,;\,q_2)}{\Delta_g(q_2\,;\,q_2)} \cdot \cdots\cdots \cdot \frac{\Delta_g(q_1\,;\,q_2)}{\Delta_g(q_2\,;\,q_2)}$$

$$\frac{f(x_1,q_2)}{f(x_1,\mu_F)} \cdot \frac{f(x_2,q_2)}{f(x_2,\mu_F)}$$