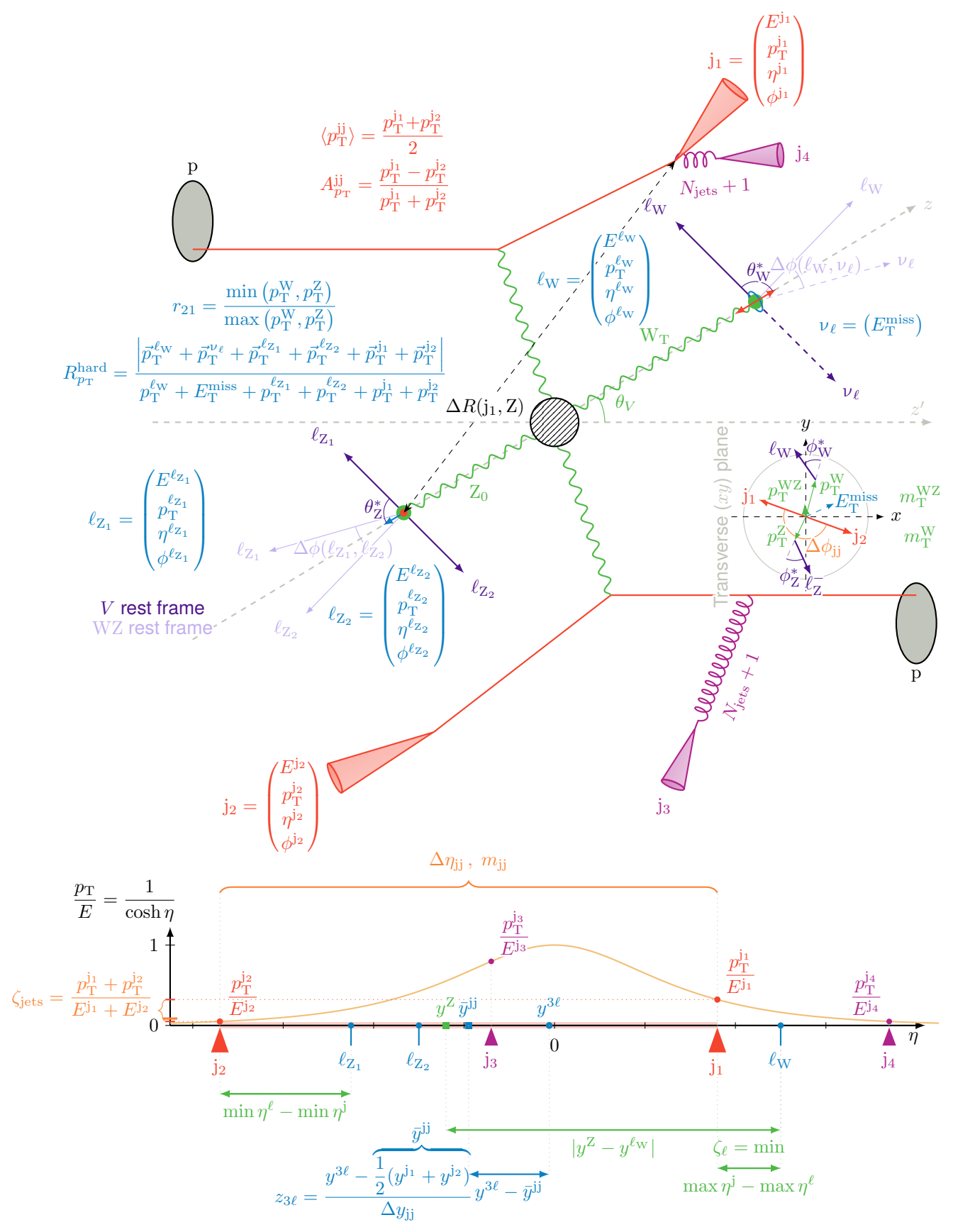

$j_1 = \begin{pmatrix} E^{j_1} \\ p_T^{j_1} \\ \eta^{j_1} \\ \phi^{j_1} \end{pmatrix}$
$\langle p_T^{jj} \rangle = \frac{p_T^{j_1} + p_T^{j_2}}{2}$
$A_{p_T}^{jj} = \frac{p_T^{j_1} - p_T^{j_2}}{p_T^{j_1} + p_T^{j_2}}$
p
j_4
$N_{jets} + 1$
ℓ_W
z
θ_W^*
$\Delta\phi(\ell_W, \nu_\ell)$
ν_ℓ
$\ell_W = \begin{pmatrix} E^{\ell_W} \\ p_T^{\ell_W} \\ \eta^{\ell_W} \\ \phi^{\ell_W} \end{pmatrix}$
$r_{21} = \frac{\min(p_T^W, p_T^Z)}{\max(p_T^W, p_T^Z)}$
$\nu_\ell = (E_T^{miss})$
$R_{p_T}^{hard} = \frac{\left|\vec{p}_T^{\ell_W} + \vec{p}_T^{\nu_\ell} + \vec{p}_T^{\ell_{Z_1}} + \vec{p}_T^{\ell_{Z_2}} + \vec{p}_T^{j_1} + \vec{p}_T^{j_2}\right|}{p_T^{\ell_W} + E_T^{miss} + p_T^{\ell_{Z_1}} + p_T^{\ell_{Z_2}} + p_T^{j_1} + p_T^{j_2}}$
W_T
$\Delta R(j_1, Z)$
θ_V
z'
ℓ_{Z_1}
Z_0
$\ell_{Z_1} = \begin{pmatrix} E^{\ell_{Z_1}} \\ p_T^{\ell_{Z_1}} \\ \eta^{\ell_{Z_1}} \\ \phi^{\ell_{Z_1}} \end{pmatrix}$
θ_Z^*
$\Delta\phi(\ell_{Z_1}, \ell_{Z_2})$
ℓ_{Z_2}
V rest frame
WZ rest frame
$\ell_{Z_2} = \begin{pmatrix} E^{\ell_{Z_2}} \\ p_T^{\ell_{Z_2}} \\ \eta^{\ell_{Z_2}} \\ \phi^{\ell_{Z_2}} \end{pmatrix}$
Transverse (xy) plane
y
ϕ_W^*
p_T^{WZ}
p_T^W
E_T^{miss}
m_T^{WZ}
m_T^W
j_1
j_2
x
p_T^Z
$\Delta\phi_{jj}$
ϕ_Z^*
ℓ_Z^-
p
$N_{jets} + 1$
$j_2 = \begin{pmatrix} E^{j_2} \\ p_T^{j_2} \\ \eta^{j_2} \\ \phi^{j_2} \end{pmatrix}$
j_3
$\Delta\eta_{jj}$, m_{jj}
$\frac{p_T}{E} = \frac{1}{\cosh\eta}$
1
$\zeta_{jets} = \frac{p_T^{j_1} + p_T^{j_2}}{E^{j_1} + E^{j_2}}$
0
$\frac{p_T^{j_3}}{E^{j_3}}$
$\frac{p_T^{j_1}}{E^{j_1}}$
$\frac{p_T^{j_2}}{E^{j_2}}$
$\frac{p_T^{j_4}}{E^{j_4}}$
y^Z
$\bar{y}^{jj}$
$y^{3\ell}$
0
η
j_2
ℓ_{Z_1}
ℓ_{Z_2}
j_3
j_1
ℓ_W
j_4
$\min\eta^\ell - \min\eta^j$
$\bar{y}^{jj}$
$|y^Z - y^{\ell_W}|$
$\zeta_\ell = \min$
$\max\eta^j - \max\eta^\ell$
$z_{3\ell} = \frac{y^{3\ell} - \frac{1}{2}(y^{j_1} + y^{j_2})}{\Delta y_{jj}}$
$y^{3\ell} - \bar{y}^{jj}$