HMχPT in $B \to P l \nu$

• Large N_c + HM

mplitudes given by the tree-level exchang

$$\left| f_+(z)_{B_q \to P} \right|^2 = D_{B_q \to P} \times \left| \frac{f_B\, g}{\sqrt{2}\, F_\pi} \; \frac{1}{z} \right|^2$$

	π^+	K^+	π^0
$D_{B_q \to P}$	1	1	$\frac{1}{2}$
	B_d^0	B_s^0	

$$\frac{1}{\Gamma_0(M_B)} \; \frac{d\Gamma}{dz} = \left| f_+(z) \right|^2 \times \left[z^2 - 4r^2 \right]^{\frac{3}{2}}$$

with $\Gamma_0(M_B) = |V_{ub}|^2 \, \frac{G_F^2 M_B^5}{192\pi^3}$

$$\Gamma(\varepsilon, r_\varepsilon) = D_{B_q \to P} \times \Gamma_0(M_B) \times \frac{\varepsilon^2}{2} \left[(1 + 2r_\varepsilon^2)\sqrt{1 - r_\varepsilon^2} + \frac{3}{2} r_\varepsilon^2 \ln \left(\frac{1 + \cdots}{1 - \cdots} \right. \right.$$

with