In[18]:=
$$\text{CP10BOOST} = \frac{s^2 + \frac{G*W}{Q}\, s + W^2}{s^2 + \frac{W}{Q}\, s + W^2}$$

Out[18]=
$$\frac{W^2 + \frac{P^2 (-1+z)^2}{(1+z)^2} + \frac{G P W (-1+z)}{Q (1+z)}}{W^2 + \frac{P^2 (-1+z)^2}{(1+z)^2} + \frac{P W (-1+z)}{Q (1+z)}}$$

In[19]:=
$$s = P \frac{z-1}{z+1}$$

Out[19]=
$$\frac{P (-1+z)}{1+z}$$

In[20]:=
$$\text{CP10BOOST}$$

Out[20]=
$$\frac{W^2 + \frac{P^2 (-1+z)^2}{(1+z)^2} + \frac{G P W (-1+z)}{Q (1+z)}}{W^2 + \frac{P^2 (-1+z)^2}{(1+z)^2} + \frac{P W (-1+z)}{Q (1+z)}}$$

In[21]:=
$$\text{Together}[\text{ExpandAll}[\%]]$$

Out[21]=
$$\frac{P^2 Q - G P W + Q W^2 - 2 P^2 Q z + 2 Q W^2 z + P^2 Q z^2 + G P W z^2 + Q W^2 z^2}{P^2 Q - P W + Q W^2 - 2 P^2 Q z + 2 Q W^2 z + P^2 Q z^2 + P W z^2 + Q W^2 z^2}$$

In[22]:=
$$\text{Collect}[\text{Numerator}[\%21], z]$$

Out[22]=
$$P^2 Q - G P W + Q W^2 + (-2 P^2 Q + 2 Q W^2) z + (P^2 Q + G P W + Q W^2) z^2$$

In[23]:=
$$\text{Collect}[\text{Denominator}[\%21], z]$$

Out[23]=
$$P^2 Q - P W + Q W^2 + (-2 P^2 Q + 2 Q W^2) z + (P^2 Q + P W + Q W^2) z^2$$

In[25]:=
$$\text{Collect}[\%22 / (P^2 Q + P W + Q W^2), z]$$

Out[25]=
$$\frac{P^2 Q - G P W + Q W^2}{P^2 Q + P W + Q W^2} + \frac{(-2 P^2 Q + 2 Q W^2) z}{P^2 Q + P W + Q W^2} + \frac{(P^2 Q + G P W + Q W^2) z^2}{P^2 Q + P W + Q W^2}$$

In[26]:=
$$\text{Collect}[\%23 / (P^2 Q + P W + Q W^2), z]$$

Out[26]=
$$\frac{P^2 Q - P W + Q W^2}{P^2 Q + P W + Q W^2} + \frac{(-2 P^2 Q + 2 Q W^2) z}{P^2 Q + P W + Q W^2} + z^2$$