

```

LZipgs_List@ $\mathbb{E}[L_-, Q_-, P_-] :=$ 
Module[{ $\xi$ , z, zs, c, ys,  $\eta s$ , lt, zrule, L1, L2, Q1, Q2},
zs = Table[ $\xi^*$ , { $\xi$ , gs}];
c = L /. Alternatives @@ (gs  $\cup$  zs)  $\rightarrow$  0;
ys = Table[ $\partial_{\xi}(L /.$  Alternatives @@ zs  $\rightarrow$  0), { $\xi$ , gs}];
 $\eta s$  = Table[ $\partial_z(L /.$  Alternatives @@ gs  $\rightarrow$  0), {z, zs}];
lt = Inverse@Table[K $\delta_{z,\xi^*}$  -  $\partial_{z,\xi}L$ , { $\xi$ , gs}, {z, zs}];
zrule = Thread[zs  $\rightarrow$  lt.(zs + ys)];
L2 = (L1 = c +  $\eta s.zs /.$  zrule) /. Alternatives @@ zs  $\rightarrow$  0;
Q2 = (Q1 = Q /. U21 /. zrule) /. Alternatives @@ zs  $\rightarrow$  0;
CF /@  $\mathbb{E}[L2, Q2, \text{Det}[lt] e^{-L2-Q2}$ 
      Zipgs[ $e^{L1+Q1}(P /.$  U21 /. zrule)]]] //.
      l2U];

```