

```

zip3vs_@{ $\mathcal{F}_-$ ,  $\mathcal{E}_E$ } := PPzip3@Module[ { $F$ ,  $u$ ,  $v$ ,  $Z$ ,  $kk$ ,  $jj$ ,  $\$m = 0$ ,  $m$ ,  $n$ },

  (*Echo[{"Zip3", $vs$ , $\mathcal{F}$ , $\mathcal{E}$ }] ; *)

Do[ $Z[0, kk] = \mathcal{E}[kk + 1]$ , { $kk$ , 0,  $\mathcal{E}@\$$ }] ;

 $F[u_-, v_-] := F[u, v] = CF@If[Wt[u] + Wt[v] == \{1, 0\}, \partial_{F[u], F[v]} \mathcal{F}, 0]$ ;

 $Z[m_-, kk_-, u_-] := Z[m, kk, u] = D_u[Z[m, kk]]$ ;

 $Z[m_-, kk_-, u_-, v_-] := Z[m, kk, u, v] = D_v[Z[m, kk, u]]$ ;

For[ $m = 0$ ,  $m \leq 2 \$m$ , ++ $m$ , For[ $kk = 0$ ,  $kk \leq \mathcal{E}@\$$ , ++ $kk$ ,

   $Z[m + 1, kk] = PP_{zip3}[m, kk] @ CF @ Sum[$ 

    If[ $F[u, v] === 0, 0$ ,

       $\frac{F[u, v]}{2 (m + 1)}$  ( $Z[m, kk, u, v] + Sum[Z[n, jj, u] * Z[m - n, kk - jj, v]$ , { $n$ , 0,  $m$ },

        { $jj$ , 0,  $kk$ })] ],

    { $u, vs$ }, { $v, vs$ }] ] ;

If[ $Z[m + 1, kk] != 0$ ,  $\$m = m + 1$ 

]] ;

CF /@ ( {

   $\mathcal{F} - Sum[F[u, v] * F[u] * F[v] / 2$ , { $u, vs$ }, { $v, vs$ }},

  E@@Table[Sum[ $Z[m, kk]$ , { $m$ , 0,  $\$m$ }], { $kk$ , 0,  $\mathcal{E}@\$$ }]

] /. (*AlsoUpper@*) Table[ $v \rightarrow 0$ , { $v, vs$ }] )

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