

```

Zip1_{ } = Identity;
Zip1_{vs_} @ {  $\mathcal{F}_$ ,  $\mathbb{E}[Q_, P_{__}]$  } := Module[{ $\mathcal{I}$ , F, G, u, v},
   $\mathcal{I}$  = IdentityMatrix@Length@vs;
  F = Table[If[Wt[u] + Wt[v] == {1, 0},  $\partial_{u,v} \mathcal{F}$ , 0], {u, vs}, {v, vs}];
  G = Table[If[Wt[u] + Wt[v] == {1, 0},  $\partial_{u,v} Q$ , 0], {u, vs}, {v, vs}];
  {CF[(vs) . (F.Inverse[ $\mathcal{I}$  - G.F]) . (vs) / 2],
    $\mathbb{E}[CF[Q - \text{PowerExpand@Log}[\text{Det}[\mathcal{I} - G.F]] / 2 - vs.G.vs / 2], P]$ 
]

```