Pensieve header: Experiments with exponential zipping.

```
In[ ]:= Unprotect[SeriesData];
SeriesData /: Expand[sd_SeriesData] := MapAt[Expand, sd, 3];
Protect[SeriesData];
z* = ζ; ζ* = z; Zip{}[P_] := P;
Zip{ζ_,ζs___}[P_] := (Expand[P // Zip{ζs}] /. f_. ζ^d_. :> ∂{ζ*,d} f) /. ζ* → 0
```

In[•]:=
```
Zip_{{z}}[Series[e^Sum[a_{p,m,n} ϵ^p z^m z^n, {p, 1, 3}, {m, 0, 3}, {n, 0, 3}], {ϵ, 0, 3}]]
```

Out[•]=

$$1+\left(a_{1,0,0}+a_{1,1,1}+2\,a_{1,2,2}+6\,a_{1,3,3}\right)\epsilon+$$
$$\left(\frac{1}{2}a_{1,0,0}^2+a_{1,0,1}\,a_{1,1,0}+a_{1,0,0}\,a_{1,1,1}+a_{1,1,1}^2+2\,a_{1,1,0}\,a_{1,1,2}+2\,a_{1,0,2}\,a_{1,2,0}+\right.$$
$$6\,a_{1,1,3}\,a_{1,2,0}+2\,a_{1,0,1}\,a_{1,2,1}+6\,a_{1,1,2}\,a_{1,2,1}+2\,a_{1,0,0}\,a_{1,2,2}+6\,a_{1,1,1}\,a_{1,2,2}+$$
$$12\,a_{1,2,2}^2+6\,a_{1,1,0}\,a_{1,2,3}+24\,a_{1,2,1}\,a_{1,2,3}+6\,a_{1,0,3}\,a_{1,3,0}+6\,a_{1,0,2}\,a_{1,3,1}+$$
$$24\,a_{1,1,3}\,a_{1,3,1}+6\,a_{1,0,1}\,a_{1,3,2}+24\,a_{1,1,2}\,a_{1,3,2}+120\,a_{1,2,3}\,a_{1,3,2}+6\,a_{1,0,0}\,a_{1,3,3}+$$
$$\left.24\,a_{1,1,1}\,a_{1,3,3}+120\,a_{1,2,2}\,a_{1,3,3}+360\,a_{1,3,3}^2+a_{2,0,0}+a_{2,1,1}+2\,a_{2,2,2}+6\,a_{2,3,3}\right)\epsilon^2+$$
$$\left(\frac{1}{6}a_{1,0,0}^3+a_{1,0,0}\,a_{1,0,1}\,a_{1,1,0}+a_{1,0,2}\,a_{1,1,0}^2+\frac{1}{2}a_{1,0,0}^2\,a_{1,1,1}+2\,a_{1,0,1}\,a_{1,1,0}\,a_{1,1,1}+a_{1,0,0}\,a_{1,1,1}^2+\right.$$
$$a_{1,1,1}^3+2\,a_{1,0,0}\,a_{1,1,0}\,a_{1,1,2}+6\,a_{1,1,0}\,a_{1,1,1}\,a_{1,1,2}+3\,a_{1,1,0}^2\,a_{1,1,3}+a_{1,0,1}^2\,a_{1,2,0}+2\,a_{1,0,0}\,a_{1,0,2}\,a_{1,2,0}+$$
$$6\,a_{1,0,3}\,a_{1,1,0}\,a_{1,2,0}+6\,a_{1,0,2}\,a_{1,1,1}\,a_{1,2,0}+6\,a_{1,0,1}\,a_{1,1,2}\,a_{1,2,0}+12\,a_{1,1,2}^2\,a_{1,2,0}+$$
$$6\,a_{1,0,0}\,a_{1,1,3}\,a_{1,2,0}+24\,a_{1,1,1}\,a_{1,1,3}\,a_{1,2,0}+2\,a_{1,0,0}\,a_{1,0,1}\,a_{1,2,1}+6\,a_{1,0,2}\,a_{1,1,0}\,a_{1,2,1}+$$
$$6\,a_{1,0,1}\,a_{1,1,1}\,a_{1,2,1}+6\,a_{1,0,0}\,a_{1,1,2}\,a_{1,2,1}+24\,a_{1,1,1}\,a_{1,1,2}\,a_{1,2,1}+24\,a_{1,1,0}\,a_{1,1,3}\,a_{1,2,1}+$$
$$24\,a_{1,0,3}\,a_{1,2,0}\,a_{1,2,1}+12\,a_{1,0,2}\,a_{1,2,1}^2+60\,a_{1,1,3}\,a_{1,2,1}^2+a_{1,0,0}^2\,a_{1,2,2}+6\,a_{1,0,1}\,a_{1,1,0}\,a_{1,2,2}+$$
$$6\,a_{1,0,0}\,a_{1,1,1}\,a_{1,2,2}+12\,a_{1,1,1}^2\,a_{1,2,2}+24\,a_{1,1,0}\,a_{1,1,2}\,a_{1,2,2}+24\,a_{1,0,2}\,a_{1,2,0}\,a_{1,2,2}+$$
$$120\,a_{1,1,3}\,a_{1,2,0}\,a_{1,2,2}+24\,a_{1,0,1}\,a_{1,2,1}\,a_{1,2,2}+120\,a_{1,1,2}\,a_{1,2,1}\,a_{1,2,2}+12\,a_{1,0,0}\,a_{1,2,2}^2+$$
$$60\,a_{1,1,1}\,a_{1,2,2}^2+120\,a_{1,2,2}^3+6\,a_{1,0,0}\,a_{1,1,0}\,a_{1,2,3}+24\,a_{1,1,0}\,a_{1,1,1}\,a_{1,2,3}+24\,a_{1,0,1}\,a_{1,2,0}\,a_{1,2,3}+$$
$$120\,a_{1,1,2}\,a_{1,2,0}\,a_{1,2,3}+24\,a_{1,0,0}\,a_{1,2,1}\,a_{1,2,3}+120\,a_{1,1,1}\,a_{1,2,1}\,a_{1,2,3}+120\,a_{1,1,0}\,a_{1,2,2}\,a_{1,2,3}+$$
$$720\,a_{1,2,1}\,a_{1,2,2}\,a_{1,2,3}+360\,a_{1,2,0}\,a_{1,2,3}^2+6\,a_{1,0,1}\,a_{1,0,2}\,a_{1,3,0}+6\,a_{1,0,0}\,a_{1,0,3}\,a_{1,3,0}+$$
$$24\,a_{1,0,3}\,a_{1,1,1}\,a_{1,3,0}+24\,a_{1,0,2}\,a_{1,1,2}\,a_{1,3,0}+24\,a_{1,0,1}\,a_{1,1,3}\,a_{1,3,0}+120\,a_{1,1,2}\,a_{1,1,3}\,a_{1,3,0}+$$
$$120\,a_{1,0,3}\,a_{1,2,2}\,a_{1,3,0}+120\,a_{1,0,2}\,a_{1,2,3}\,a_{1,3,0}+720\,a_{1,1,3}\,a_{1,2,3}\,a_{1,3,0}+3\,a_{1,0,1}^2\,a_{1,3,1}+$$
$$6\,a_{1,0,0}\,a_{1,0,2}\,a_{1,3,1}+24\,a_{1,0,3}\,a_{1,1,0}\,a_{1,3,1}+24\,a_{1,0,2}\,a_{1,1,1}\,a_{1,3,1}+24\,a_{1,0,1}\,a_{1,1,2}\,a_{1,3,1}+$$
$$60\,a_{1,1,2}^2\,a_{1,3,1}+24\,a_{1,0,0}\,a_{1,1,3}\,a_{1,3,1}+120\,a_{1,1,1}\,a_{1,1,3}\,a_{1,3,1}+120\,a_{1,0,3}\,a_{1,2,1}\,a_{1,3,1}+$$
$$120\,a_{1,0,2}\,a_{1,2,2}\,a_{1,3,1}+720\,a_{1,1,3}\,a_{1,2,2}\,a_{1,3,1}+120\,a_{1,0,1}\,a_{1,2,3}\,a_{1,3,1}+720\,a_{1,1,2}\,a_{1,2,3}\,a_{1,3,1}+$$
$$2520\,a_{1,2,3}^2\,a_{1,3,1}+6\,a_{1,0,0}\,a_{1,0,1}\,a_{1,3,2}+24\,a_{1,0,2}\,a_{1,1,0}\,a_{1,3,2}+24\,a_{1,0,1}\,a_{1,1,1}\,a_{1,3,2}+$$
$$24\,a_{1,0,0}\,a_{1,1,2}\,a_{1,3,2}+120\,a_{1,1,1}\,a_{1,1,2}\,a_{1,3,2}+120\,a_{1,1,0}\,a_{1,1,3}\,a_{1,3,2}+120\,a_{1,0,3}\,a_{1,2,0}\,a_{1,3,2}+$$
$$120\,a_{1,0,2}\,a_{1,2,1}\,a_{1,3,2}+720\,a_{1,1,3}\,a_{1,2,1}\,a_{1,3,2}+120\,a_{1,0,1}\,a_{1,2,2}\,a_{1,3,2}+720\,a_{1,1,2}\,a_{1,2,2}\,a_{1,3,2}+$$
$$120\,a_{1,0,0}\,a_{1,2,3}\,a_{1,3,2}+720\,a_{1,1,1}\,a_{1,2,3}\,a_{1,3,2}+5040\,a_{1,2,2}\,a_{1,2,3}\,a_{1,3,2}+720\,a_{1,0,3}\,a_{1,3,1}\,a_{1,3,2}+$$
$$360\,a_{1,0,2}\,a_{1,3,2}^2+2520\,a_{1,1,3}\,a_{1,3,2}^2+3\,a_{1,0,0}^2\,a_{1,3,3}+24\,a_{1,0,1}\,a_{1,1,0}\,a_{1,3,3}+24\,a_{1,0,0}\,a_{1,1,1}\,a_{1,3,3}+$$
$$60\,a_{1,1,1}^2\,a_{1,3,3}+120\,a_{1,1,0}\,a_{1,1,2}\,a_{1,3,3}+120\,a_{1,0,2}\,a_{1,2,0}\,a_{1,3,3}+720\,a_{1,1,3}\,a_{1,2,0}\,a_{1,3,3}+$$
$$120\,a_{1,0,1}\,a_{1,2,1}\,a_{1,3,3}+720\,a_{1,1,2}\,a_{1,2,1}\,a_{1,3,3}+120\,a_{1,0,0}\,a_{1,2,2}\,a_{1,3,3}+720\,a_{1,1,1}\,a_{1,2,2}\,a_{1,3,3}+$$
$$2520\,a_{1,2,2}^2\,a_{1,3,3}+720\,a_{1,1,0}\,a_{1,2,3}\,a_{1,3,3}+5040\,a_{1,2,1}\,a_{1,2,3}\,a_{1,3,3}+720\,a_{1,0,3}\,a_{1,3,0}\,a_{1,3,3}+$$
$$720\,a_{1,0,2}\,a_{1,3,1}\,a_{1,3,3}+5040\,a_{1,1,3}\,a_{1,3,1}\,a_{1,3,3}+720\,a_{1,0,1}\,a_{1,3,2}\,a_{1,3,3}+5040\,a_{1,1,2}\,a_{1,3,2}\,a_{1,3,3}+$$
$$40\,320\,a_{1,2,3}\,a_{1,3,2}\,a_{1,3,3}+360\,a_{1,0,0}\,a_{1,3,3}^2+2520\,a_{1,1,1}\,a_{1,3,3}^2+20\,160\,a_{1,2,2}\,a_{1,3,3}^2+60\,480\,a_{1,3,3}^3+$$
$$a_{1,0,0}\,a_{2,0,0}+a_{1,1,1}\,a_{2,0,0}+2\,a_{1,2,2}\,a_{2,0,0}+6\,a_{1,3,3}\,a_{2,0,0}+a_{1,1,0}\,a_{2,0,1}+2\,a_{1,2,1}\,a_{2,0,1}+$$
$$6\,a_{1,3,2}\,a_{2,0,1}+2\,a_{1,2,0}\,a_{2,0,2}+6\,a_{1,3,1}\,a_{2,0,2}+6\,a_{1,3,0}\,a_{2,0,3}+a_{1,0,1}\,a_{2,1,0}+2\,a_{1,1,2}\,a_{2,1,0}+$$
$$6\,a_{1,2,3}\,a_{2,1,0}+a_{1,0,0}\,a_{2,1,1}+2\,a_{1,1,1}\,a_{2,1,1}+6\,a_{1,2,2}\,a_{2,1,1}+24\,a_{1,3,3}\,a_{2,1,1}+2\,a_{1,1,0}\,a_{2,1,2}+$$
$$6\,a_{1,2,1}\,a_{2,1,2}+24\,a_{1,3,2}\,a_{2,1,2}+6\,a_{1,2,0}\,a_{2,1,3}+24\,a_{1,3,1}\,a_{2,1,3}+2\,a_{1,0,2}\,a_{2,2,0}+6\,a_{1,1,3}\,a_{2,2,0}+$$
$$2\,a_{1,0,1}\,a_{2,2,1}+6\,a_{1,1,2}\,a_{2,2,1}+24\,a_{1,2,3}\,a_{2,2,1}+2\,a_{1,0,0}\,a_{2,2,2}+6\,a_{1,1,1}\,a_{2,2,2}+24\,a_{1,2,2}\,a_{2,2,2}+$$
$$120\,a_{1,3,3}\,a_{2,2,2}+6\,a_{1,1,0}\,a_{2,2,3}+24\,a_{1,2,1}\,a_{2,2,3}+120\,a_{1,3,2}\,a_{2,2,3}+6\,a_{1,0,3}\,a_{2,3,0}+$$
$$6\,a_{1,0,2}\,a_{2,3,1}+24\,a_{1,1,3}\,a_{2,3,1}+6\,a_{1,0,1}\,a_{2,3,2}+24\,a_{1,1,2}\,a_{2,3,2}+120\,a_{1,2,3}\,a_{2,3,2}+6\,a_{1,0,0}\,a_{2,3,3}+$$
$$\left.24\,a_{1,1,1}\,a_{2,3,3}+120\,a_{1,2,2}\,a_{2,3,3}+720\,a_{1,3,3}\,a_{2,3,3}+a_{3,0,0}+a_{3,1,1}+2\,a_{3,2,2}+6\,a_{3,3,3}\right)\epsilon^3+O[\epsilon]^4$$