

Pensieve header: A minimal Gassner+ representation. Continues pensieve://2016-05/.

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σi,j := Expand*ReplaceAll[{wj := (1 - ti) wi + ti wj,
  f.. vj := f (1 - ti) vi + f ti vj + (ti - 1) (ti ∂ti f - tj ∂tj f) wi + f ti wi }]]

Column[R31 = (# // σ1,2 // σ1,3 // σ2,3) & /@ {
  f[t1, t2, t3] v1, f[t1, t2, t3] v2, f[t1, t2, t3] v3, w1, w2, w3}]
f[t1, t2, t3] v1
f[t1, t2, t3] v1 - f[t1, t2, t3] t1 v1 + f[t1, t2, t3] t1 v2 +
  f[t1, t2, t3] t1 w1 + t2 w1 f(0,1,0)[t1, t2, t3] - t1 t2 w1 f(0,1,0)[t1, t2, t3] -
  t1 w1 f(1,0,0)[t1, t2, t3] + t12 w1 f(1,0,0)[t1, t2, t3]
f[t1, t2, t3] v1 - f[t1, t2, t3] t1 v1 + f[t1, t2, t3] t1 v2 -
  f[t1, t2, t3] t1 t2 v2 + f[t1, t2, t3] t1 t2 v3 + f[t1, t2, t3] t1 w1 +
  f[t1, t2, t3] t1 t2 w2 + t3 w1 f(0,0,1)[t1, t2, t3] - t1 t3 w1 f(0,0,1)[t1, t2, t3] +
  t1 t3 w2 f(0,0,1)[t1, t2, t3] - t1 t2 t3 w2 f(0,0,1)[t1, t2, t3] - t1 t2 w2 f(0,1,0)[t1, t2, t3] +
  t1 t22 w2 f(0,1,0)[t1, t2, t3] - t1 w1 f(1,0,0)[t1, t2, t3] + t12 w1 f(1,0,0)[t1, t2, t3]
w1
w1 - t1 w1 + t1 w2
w1 - t1 w1 + t1 w2 - t1 t2 w2 + t1 t2 w3

R3r = (# // σ2,3 // σ1,3 // σ1,2) & /@ {
  f[t1, t2, t3] v1, f[t1, t2, t3] v2, f[t1, t2, t3] v3, w1, w2, w3};
R31 - R3r
{0, 0, 0, 0, 0, 0}

Column[OC1 = (# // σ1,2 // σ1,3) & /@ {
  f[t1, t2, t3] v1, f[t1, t2, t3] v2, f[t1, t2, t3] v3, w1, w2, w3}]
f[t1, t2, t3] v1
f[t1, t2, t3] v1 - f[t1, t2, t3] t1 v1 + f[t1, t2, t3] t1 v2 +
  f[t1, t2, t3] t1 w1 + t2 w1 f(0,1,0)[t1, t2, t3] - t1 t2 w1 f(0,1,0)[t1, t2, t3] -
  t1 w1 f(1,0,0)[t1, t2, t3] + t12 w1 f(1,0,0)[t1, t2, t3]
f[t1, t2, t3] v1 - f[t1, t2, t3] t1 v1 + f[t1, t2, t3] t1 v3 +
  f[t1, t2, t3] t1 w1 + t3 w1 f(0,0,1)[t1, t2, t3] - t1 t3 w1 f(0,0,1)[t1, t2, t3] -
  t1 w1 f(1,0,0)[t1, t2, t3] + t12 w1 f(1,0,0)[t1, t2, t3]
w1
w1 - t1 w1 + t1 w2
w1 - t1 w1 + t1 w3

OCr = (# // σ1,3 // σ1,2) & /@ {
  f[t1, t2, t3] v1, f[t1, t2, t3] v2, f[t1, t2, t3] v3, w1, w2, w3};
OC1 - OCr
{0, 0, 0, 0, 0, 0}

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Column[UC1 = (# // $\sigma_{2,3}$ // $\sigma_{1,3}$) & /@ {

f[t₁, t₂, t₃] v₁, f[t₁, t₂, t₃] v₂, f[t₁, t₂, t₃] v₃, w₁, w₂, w₃}}

f[t₁, t₂, t₃] v₁

f[t₁, t₂, t₃] v₂

f[t₁, t₂, t₃] t₂ v₁ - f[t₁, t₂, t₃] t₁ t₂ v₁ + f[t₁, t₂, t₃] v₂ -

f[t₁, t₂, t₃] t₂ v₂ + f[t₁, t₂, t₃] t₁ t₂ v₃ + f[t₁, t₂, t₃] t₁ t₂ w₁ +

f[t₁, t₂, t₃] t₂ w₂ + t₂ t₃ w₁ f^(0,0,1)[t₁, t₂, t₃] - t₁ t₂ t₃ w₁ f^(0,0,1)[t₁, t₂, t₃] +

t₃ w₂ f^(0,0,1)[t₁, t₂, t₃] - t₂ t₃ w₂ f^(0,0,1)[t₁, t₂, t₃] - t₂ w₂ f^(0,1,0)[t₁, t₂, t₃] +

t₂² w₂ f^(0,1,0)[t₁, t₂, t₃] - t₁ t₂ w₁ f^(1,0,0)[t₁, t₂, t₃] + t₁² t₂ w₁ f^(1,0,0)[t₁, t₂, t₃]

w₁

w₂

t₂ w₁ - t₁ t₂ w₁ + w₂ - t₂ w₂ + t₁ t₂ w₃

Column[UCr = (# // $\sigma_{1,3}$ // $\sigma_{2,3}$) & /@ {

f[t₁, t₂, t₃] v₁, f[t₁, t₂, t₃] v₂, f[t₁, t₂, t₃] v₃, w₁, w₂, w₃}}

f[t₁, t₂, t₃] v₁

f[t₁, t₂, t₃] v₂

f[t₁, t₂, t₃] v₁ - f[t₁, t₂, t₃] t₁ v₁ + f[t₁, t₂, t₃] t₁ v₂ -

f[t₁, t₂, t₃] t₁ t₂ v₂ + f[t₁, t₂, t₃] t₁ t₂ v₃ + f[t₁, t₂, t₃] t₁ w₁ +

f[t₁, t₂, t₃] t₁ t₂ w₂ + t₃ w₁ f^(0,0,1)[t₁, t₂, t₃] - t₁ t₃ w₁ f^(0,0,1)[t₁, t₂, t₃] +

t₁ t₃ w₂ f^(0,0,1)[t₁, t₂, t₃] - t₁ t₂ t₃ w₂ f^(0,0,1)[t₁, t₂, t₃] - t₁ t₂ w₂ f^(0,1,0)[t₁, t₂, t₃] +

t₁ t₂² w₂ f^(0,1,0)[t₁, t₂, t₃] - t₁ w₁ f^(1,0,0)[t₁, t₂, t₃] + t₁² w₁ f^(1,0,0)[t₁, t₂, t₃]

w₁

w₂

w₁ - t₁ w₁ + t₁ w₂ - t₁ t₂ w₂ + t₁ t₂ w₃

UC1 - UCr

{0, 0, -f[t₁, t₂, t₃] v₁ + f[t₁, t₂, t₃] t₁ v₁ + f[t₁, t₂, t₃] t₂ v₁ -

f[t₁, t₂, t₃] t₁ t₂ v₁ + f[t₁, t₂, t₃] v₂ - f[t₁, t₂, t₃] t₁ v₂ - f[t₁, t₂, t₃] t₂ v₂ +

f[t₁, t₂, t₃] t₁ t₂ v₂ - f[t₁, t₂, t₃] t₁ w₁ + f[t₁, t₂, t₃] t₁ t₂ w₁ +

f[t₁, t₂, t₃] t₂ w₂ - f[t₁, t₂, t₃] t₁ t₂ w₂ - t₃ w₁ f^(0,0,1)[t₁, t₂, t₃] +

t₁ t₃ w₁ f^(0,0,1)[t₁, t₂, t₃] + t₂ t₃ w₁ f^(0,0,1)[t₁, t₂, t₃] - t₁ t₂ t₃ w₁ f^(0,0,1)[t₁, t₂, t₃] +

t₃ w₂ f^(0,0,1)[t₁, t₂, t₃] - t₁ t₃ w₂ f^(0,0,1)[t₁, t₂, t₃] - t₂ t₃ w₂ f^(0,0,1)[t₁, t₂, t₃] +

t₁ t₂ t₃ w₂ f^(0,0,1)[t₁, t₂, t₃] - t₂ w₂ f^(0,1,0)[t₁, t₂, t₃] + t₁ t₂ w₂ f^(0,1,0)[t₁, t₂, t₃] +

t₂² w₂ f^(0,1,0)[t₁, t₂, t₃] - t₁ t₂² w₂ f^(0,1,0)[t₁, t₂, t₃] + t₁ w₁ f^(1,0,0)[t₁, t₂, t₃] -

t₁² w₁ f^(1,0,0)[t₁, t₂, t₃] - t₁ t₂ w₁ f^(1,0,0)[t₁, t₂, t₃] + t₁² t₂ w₁ f^(1,0,0)[t₁, t₂, t₃],

0, 0, -w₁ + t₁ w₁ + t₂ w₁ - t₁ t₂ w₁ + w₂ - t₁ w₂ - t₂ w₂ + t₁ t₂ w₂}