

Pensieve header: Fixing many many signs for SnG.

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SetDirectory["C:\\drorbn\\AcademicPensieve\\2016-03"];
<< SnG.m

SetSigns[]
SetSigns[]

tmhts[u_] :=
  (u // tm[1, 2, 1] // hts[4, 1]) - (u // hts[4, 1] // hts[4, 2] // tm[1, 2, 1]);
tmhts@UU[a[f2[b1, b2, b3], 1, 4]]
UU[0]

ε8 = ε9 ε3;

tmhts[u_] :=
  (u // tm[1, 2, 1] // hts[4, 1]) - (u // hts[4, 1] // hts[4, 2] // tm[1, 2, 1]);
tmhts@UU[a[f6[b1, b2, b3], 2, 4]]
UU[0]

ε3 = ε5;

hmhts[u_] :=
  (u // hm[1, 2, 1] // hts[1, 4]) - (u // hts[2, 4] // hts[1, 4] // hm[1, 2, 1]);
hmhts@UU[ca[f24[b4, b5], 2, 4, 1]]
UU[0]

ε4 = ε10;

hmhts[u_] :=
  (u // hm[2, 1, 1] // hts[1, 4]) - (u // hts[1, 4] // hts[2, 4] // hm[2, 1, 1]);
hmhts@UU[δaa[f43[b4, b5], 4, 1, 5, 2]]
UU[0]

ε16 = -ε2 ε9;

tbAS[u_, v_] := tb[0][u, v] + tb[0][v, u];
tbAS@@{UU[a[f2[b0, b1], 0, 1]], UU[a[g2[b0, b2], 0, 3]]}
UU[0]

ε20 = ε19;

tbAS[u_, v_] := tb[0][u, v] + tb[0][v, u];
tbAS@@{UU[a[f2[b0, b1], 0, 1]], UU[a[g6[b0, b2], 2, 3]]}
UU[0]

ε22 = ε19;

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hbJacobi[u_, v_, w_] :=
  hb[0][u, hb[0][v, w]] + hb[0][v, hb[0][w, u]] + hb[0][w, hb[0][u, v]];
hbJacobi @@ {UU[a[f2[b1, b2], 1, 0]], UU[a[g2[b3, b4], 3, 0]], UU[δa[h3[b5, b6], 5, 0]]}
UU[0]

ε25 = ε23;

hbJacobi[u_, v_, w_] :=
  hb[0][u, hb[0][v, w]] + hb[0][v, hb[0][w, u]] + hb[0][w, hb[0][u, v]];
hbJacobi @@ {UU[a[f2[b1, b2], 1, 0]], UU[a[g2[b3, b4], 3, 0]], UU[c[h11[b5, b6], 0]]}
UU[0]

ε23 = ε24 ε0;

hbJacobi[u_, v_, w_] :=
  hb[0][u, hb[0][v, w]] + hb[0][v, hb[0][w, u]] + hb[0][w, hb[0][u, v]];
hbJacobi @@ {UU[a[f2[b1, b2], 1, 0]], UU[a[g2[b3, b4], 3, 0]],
  UU[ca[h13[b5, b6], 0, 5, 0]]}
UU[0]

ε27 = ε24 ε0;

ε29 = ε24 ε0;

hbJacobi[u_, v_, w_] :=
  hb[0][u, hb[0][v, w]] + hb[0][v, hb[0][w, u]] + hb[0][w, hb[0][u, v]];
hbJacobi @@ {UU[δaa[f28[b1, b2], 2, 0, 2, 1]],
  UU[a[g6[b3, b4], 4, 0]], UU[a[h6[b5, b6], 6, 0]]}
UU[0]

ε26 = ε24;

ε0 = ε1;

hbJacobi[u_, v_, w_] :=
  hb[0][u, hb[0][v, w]] + hb[0][v, hb[0][w, u]] + hb[0][w, hb[0][u, v]];
hbJacobi @@ {UU[a[f2[b1, b2], 1, 0]], UU[a[g2[b3, b4], 3, 0]],
  UU[ca[h13[b5, b6], 0, 5, 0]]}
UU[0]

ε28 = ε1 ε24;

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thhJacobi[u_, v_, w_] := Plus[
  -thb[0, 0][u, hb[0][v, w]] + hb[0][thb[0, 0][u, v], w] + thb[0, 0][thb[0, 0][u, v],
    w] + hb[0][v, thb[0, 0][u, w]] - thb[0, 0][thb[0, 0][u, w], v]
];
thhJacobi@@{UU[a[f2[b0, b1], 0, 1]], UU[a[g2[b2, b3], 2, 0]], UU[a[h2[b4, b5], 4, 0]]}
UU[0]

e47 = e35;

e35 = e1 e24;

e36 = e1 e31;

e46 = e1 e24;

e33 = e32;

thhJacobi[u_, v_, w_] := Plus[
  -thb[0, 0][u, hb[0][v, w]] + hb[0][thb[0, 0][u, v], w] + thb[0, 0][thb[0, 0][u, v],
    w] + hb[0][v, thb[0, 0][u, w]] - thb[0, 0][thb[0, 0][u, w], v]
];
thhJacobi@@
{UU[deltaa[f23[b0, b1], 0, 2, 0, 2]], UU[a[g6[b2, b3], 3, 0]], UU[a[h6[b4, b5], 5, 0]]}
UU[0]

e45 = e1 e24;

thhJacobi[u_, v_, w_] := Plus[
  -thb[0, 0][u, hb[0][v, w]] + hb[0][thb[0, 0][u, v], w] + thb[0, 0][thb[0, 0][u, v],
    w] + hb[0][v, thb[0, 0][u, w]] - thb[0, 0][thb[0, 0][u, w], v]
];
thhJacobi@@{UU[a[f2[b0, b1], 0, 1]], UU[a[g2[b2, b3], 2, 0]], UU[c[h11[b4, b5], 0]]}
UU[0]

e38 = e1 e37;

thhJacobi[u_, v_, w_] := Plus[
  -thb[0, 0][u, hb[0][v, w]] + hb[0][thb[0, 0][u, v], w] + thb[0, 0][thb[0, 0][u, v],
    w] + hb[0][v, thb[0, 0][u, w]] - thb[0, 0][thb[0, 0][u, w], v]
];
thhJacobi@@
{UU[a[f2[b0, b1], 0, 1]], UU[a[g2[b2, b3], 2, 0]], UU[ca[h13[b4, b5], 0, 4, 0]]}
UU[0]

e43 = e40;

e42 = e1 e39;

e44 = e1 e41;

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thhJacobi[u_, v_, w_] := Plus[
  -thb[0, 0][u, hb[0][v, w]] + hb[0][thb[0, 0][u, v], w] + thb[0, 0][thb[0, 0][u, v],
    w] + hb[0][v, thb[0, 0][u, w]] - thb[0, 0][thb[0, 0][u, w], v]
];
thhJacobi@@
{UU[a[f2[b0, b1], 0, 1]], UU[a[g2[b2, b3], 2, 0]], UU[δaa[h21[b4, b5], 4, 0, 4, 0]]}
UU[0]

ε40 = ε1 ε39;
ε41 = ε2 ε37;

tthJacobi[u_, v_, w_] := Plus[
  -thb[0, 0][tb[0][u, v], w] + tb[0][thb[0, 0][u, w], v] - thb[0, 0][v,
    thb[0, 0][u, w]] + tb[0][u, thb[0, 0][v, w]] + thb[0, 0][u, thb[0, 0][v, w]]
];
tthJacobi@@{UU[a[f2[b0, b1], 0, 1]], UU[a[g2[b0, b2], 0, 3]], UU[a[h2[b3, b4], 3, 0]]}
UU[0]

ε21 = ε1 ε19;
ε31 = ε24 ε19 / ε39;

ε48 = ε1 ε24;

dbAS[u_, v_] := db[0][u, v] + db[0][v, u];
dbAS@@{UU[a[f2[b0, b1, b2], 0, 0]], UU[a[g2[b0, b3, b4], 0, 0]]}
UU[0]

ε19 = ε5 ε24 / ε10;

dbJacobi[u_, v_, w_] :=
  db[0][u, db[0][v, w]] + db[0][v, db[0][w, u]] + db[0][w, db[0][u, v]];
dbJacobi@@{UU[a[f2[b0, b1, b2], 0, 0]], UU[a[g4[b0, b3, b4], 0, 3]],
  UU[a[h8[b0, b5, b6], 5, 0]]}
UU[0]

ε39 = ε24;
ε37 = ε24;

ε32 = ε2 ε5 ε24 / ε10;

ε2 = ε1 ε10;

ε34 = ε1 ε5 ε24;

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dbdm[u_, v_] := Plus[
  db[1][u, dσ[2, -2][v]] // dm[2, -2, 2],
  -db[1][u, dσ[2, -2][v]] // dm[-2, 2, 2],
  -db[2][u, dσ[1, -1][v]] // dm[1, -1, 1],
  db[2][u, dσ[1, -1][v]] // dm[-1, 1, 1]
];
dbdm@@{UU[a[f2[b1, b2, b3], 1, 1]], UU[a[g4[b1, b2, b4], 1, 2]]}
UU[0]

ε24 = ε1 ε10;
ε12 = ε1 ε10;
ε11 = ε1 ε10;

dbdm[u_, v_] := Plus[
  db[1][u, dσ[2, -2][v]] // dm[2, -2, 2],
  -db[1][u, dσ[2, -2][v]] // dm[-2, 2, 2],
  -db[2][u, dσ[1, -1][v]] // dm[1, -1, 1],
  db[2][u, dσ[1, -1][v]] // dm[-1, 1, 1]
];
dbdm@@{UU[a[f4[b1, b2, b3], 1, 2]], UU[a[g8[b1, b2, b4], 2, 1]]}
UU[0]

ε7 = -ε1 ε5;
ε13 = -ε1 ε10;

hmhts[u_] :=
  (u // hm[2, 1, 1] // hts[1, 4]) - (u // hts[1, 4] // hts[2, 4] // hm[2, 1, 1]);
UU[δaa[f37[b4, b5], 4, 1, 4, 2]] // hmhts
UU[0]

ε17 = ε1 ε9 ε10;

tthJacobi[u_, v_, w_] := Plus[
  -thb[0, 0][tb[0][u, v], w] + tb[0][thb[0, 0][u, w], v] - thb[0, 0][v,
    thb[0, 0][u, w]] + tb[0][u, thb[0, 0][v, w]] + thb[0, 0][u, thb[0, 0][v, w]]
];
tthJacobi@@{UU[β[f1[b0, b1]], UU[a[g2[b0, b2], 0, 3]], UU[a[h2[b3, b4], 3, 0]]}
UU[0]

ε30 = ε18;

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tmhts[u_] :=
  (u // tm[2, 1, 1] // hts[4, 1]) - (u // hts[4, 2] // hts[4, 1] // tm[2, 1, 1]);
tmhts@UU[δaa[f32[b1, b2, b3], 1, 4, 2, 4]]
UU[0]

ε15 = ε14 = ε1 ε10;

dmdb[u_, v_] := db[3][u // dm[1, 2, 3], v] -
  dm[3, 2, 3][db[3][u // dσ[1, 3], v]] - dm[1, 3, 3][db[3][u // dσ[2, 3], v]];
dmdb@@{UU[a[f8[b1, b2, b4], 2, 1]], UU[a[g4[b3, b5], 3, 5]]}
UU[0]

ε18 = ε12 ε5 ε10 / ε6;

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Contract - induced signs

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cttm[u_, v_] := ct[u // tm[1, 2, 1], v] - (ct[u, v] // tm[1, 2, 1]);
cttm@@{UU[a[f2[b1, b2, b3], 1, 0]], UU[β[g1[b0, b4]]]}
UU[0]

ε1 = 1;

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Table[ε_i, {i, 0, 48}]

{1, 1, ε₁₀, ε₅, ε₁₀, ε₅, ε₆, -ε₅, ε₅ ε₉, ε₉, ε₁₀, ε₁₀, ε₁₀, -ε₁₀, ε₁₀, ε₁₀, -ε₉ ε₁₀,
 ε₉ ε₁₀, $\frac{\epsilon_5 \epsilon_{10}}{\epsilon_6}$, ε₅, ε₅, ε₅, ε₅, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀, $\frac{\epsilon_5 \epsilon_{10}}{\epsilon_6}$, ε₅, ε₅ ε₁₀,
 ε₅ ε₁₀, ε₅ ε₁₀, ε₁₀, ε₅, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀, ε₁₀}

Table[i → ε_i, {i, 0, 48}]

{0 → 1, 1 → 1, 2 → ε₁₀, 3 → ε₅, 4 → ε₁₀, 5 → ε₅, 6 → ε₆, 7 → -ε₅, 8 → ε₅ ε₉,
 9 → ε₉, 10 → ε₁₀, 11 → ε₁₀, 12 → ε₁₀, 13 → -ε₁₀, 14 → ε₁₀, 15 → ε₁₀, 16 → -ε₉ ε₁₀,
 17 → ε₉ ε₁₀, 18 → $\frac{\epsilon_5 \epsilon_{10}}{\epsilon_6}$, 19 → ε₅, 20 → ε₅, 21 → ε₅, 22 → ε₅, 23 → ε₁₀, 24 → ε₁₀,
 25 → ε₁₀, 26 → ε₁₀, 27 → ε₁₀, 28 → ε₁₀, 29 → ε₁₀, 30 → $\frac{\epsilon_5 \epsilon_{10}}{\epsilon_6}$, 31 → ε₅, 32 → ε₅ ε₁₀,
 33 → ε₅ ε₁₀, 34 → ε₅ ε₁₀, 35 → ε₁₀, 36 → ε₅, 37 → ε₁₀, 38 → ε₁₀, 39 → ε₁₀, 40 → ε₁₀,
 41 → ε₁₀², 42 → ε₁₀, 43 → ε₁₀, 44 → ε₁₀², 45 → ε₁₀, 46 → ε₁₀, 47 → ε₁₀, 48 → ε₁₀}