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ct[s_] := ct[s, s]; ct[] = ct[0, 0];
ct[h_, t_][UU[L_], UU[R_]] := CF[UU[Distribute[pp[L, R]] /. {
  pp[_β | _δβ, _] → 0,
  pp[a[f_, i_, h], β[g_]] := β[f b_i ((∂_{b_t} g) /. b_t → 0)],
  pp[a[f_, i_, h], a[g_, t, j_]] := a[f (g /. b_t → 0), i, j],
  pp[a[f_, i_, h], a[g_, j_, k_]] := a[f b_i ((∂_{b_t} g) /. b_t → 0), j, k],
  pp[a[f_, i_, h], c[g_, j_]] := c[f b_i ((∂_{b_t} g) /. b_t → 0), j],
  pp[a[f_, i_, h], ao[g_, t, j_]] := ao[f (g /. b_t → 0), i, j],
  pp[a[f_, i_, h], ao[g_, j_, k_]] := ao[f b_i ((∂_{b_t} g) /. b_t → 0), j, k],
  pp[a[f_, i_, h], ca[g_, k_, t, j_]] := ca[f (g /. b_t → 0), k, i, j],
  pp[a[f_, i_, h], ca[g_, l_, j_, k_]] := ca[f b_i ((∂_{b_t} g) /. b_t → 0), l, j, k],
  pp[a[f_, i_, h], aao[g_, t, j_, t, k_]] → 0,
  pp[a[f_, i_, h], aao[g_, t, j_, k_, l_]] := aao[f (g /. b_t → 0), i, j, k, l],
  pp[a[f_, i_, h], aao[g_, j_, k_, t, l_]] := aao[f (g /. b_t → 0), j, k, i, l],
  pp[a[f_, i_, h], aao[g_, j_, k_, l_, m_]] := aao[f b_i ((∂_{b_t} g) /. b_t → 0), j, k, l, m],
  pp[a[_], _] → 0,
  pp[c[f_, h], β[g_]] := δβ[f ((∂_{b_t} g) /. b_t → 0)],
  pp[_c, _β] → 0,
  pp[c[f_, h], a[g_, t, j_]] := c[f (g /. b_t → 0), j],
  pp[c[f_, h], a[g_, j_, k_]] := ao[f ((∂_{b_t} g) /. b_t → 0), j, k] + c[f b_j ((∂_{b_t} g) /. b_t → 0), k],
  pp[_c, _a] → 0,
  pp[_c | _ao | _ca | _aao, _c | _ao | _ca | _aao] → 0,
  pp[ao[f_, i_, h], β[g_]] := 0,
  pp[ao[f_, i_, h], a[g_, t, j_]] := ao[f (g /. b_t → 0), i, j],
  pp[ao[f_, i_, h], a[g_, j_, k_]] := 0,
  pp[_ao, _] → 0,
  pp[ca[_ , h, _ , h], _] → 0,
  pp[ca[f_, h, i_, j_], β[g_]] := ao[f ((∂_{b_t} g) /. b_t → 0), i, j] + c[f b_i ((∂_{b_t} g) /. b_t → 0), j],
  pp[ca[f_, i_, j_, h], β[g_]] := c[f b_j ((∂_{b_t} g) /. b_t → 0), i],
  pp[ca[f_, h, i_, j_], a[g_, t, k_]] := ca[f (g /. b_t → 0), k, i, j],
  pp[ca[f_, h, i_, j_], a[g_, k_, l_]] := aao[f ((∂_{b_t} g) /. b_t → 0), i, j, k, l] + ca[f b_i ((∂_{b_t} g) /. b_t → 0), j, k, l] +
    ca[f b_k ((∂_{b_t} g) /. b_t → 0), l, i, j],
  pp[ca[f_, i_, j_, h], a[g_, t, k_]] := ca[f (g /. b_t → 0), i, j, k],
  pp[ca[f_, i_, j_, h], a[g_, k_, l_]] := ca[f b_j ((∂_{b_t} g) /. b_t → 0), i, k, l],
  pp[_ca, _] → 0,
  pp[aao[_ , _ , h, _ , h], _] → 0,
  pp[aao[f_, i_, h, j_, k_], β[g_]] := c[-f b_i b_j ((∂_{b_t} g) /. b_t → 0), k],
  pp[aao[f_, i_, h, j_, k_], a[g_, t, l_]] := aao[f (g /. b_t → 0), i, l, j, k],
  pp[aao[f_, i_, h, j_, k_], a[g_, l_, m_]] := ca[-f b_i b_j ((∂_{b_t} g) /. b_t → 0), k, l, m],
  pp[aao[f_, i_, j_, k_, h], β[g_]] := c[-f b_i b_k ((∂_{b_t} g) /. b_t → 0), j],
  pp[aao[f_, i_, j_, k_, h], a[g_, t, l_]] := aao[f (g /. b_t → 0), i, j, k, l],
  pp[aao[f_, i_, j_, k_, h], a[g_, l_, m_]] := ca[-f b_i b_k ((∂_{b_t} g) /. b_t → 0), j, l, m],
  pp[_aao, _] → 0 }]]];

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