> $restart:$

> $with(DifferentialGeometry):$

> $with(Tools): with(LinearAlgebra):$

> $DGsetup([w, x, y, z1, z],\ [a, a1, b, b1, d, d1, e, e1], frame1, verbose);$

The following coordinates have been protected:

$[w, x, y, z1, z, a, a1, b, b1, d, d1, e, e1]$

The following vector fields have been defined and protected:

$[D\_w, D\_x, D\_y, D\_z1, D\_z, D\_a, D\_a1, D\_b, D\_b1, D\_d, D\_d1, D\_e, D\_e1]$

The following differential 1-forms have been defined and protected:

$[dw, dx, dy, dz1, dz, da, da1, db, db1, dd, dd1, de, de1]$

frame name: frame1 **(1)**

Par rapport à la session précédente, e:= e - b*B1, d:= d - b1*B. On a normalisé c:= a*a1*B1.

frame1 > $Der := \textbf{proc}(x)\ \textbf{local}\, y;\ y := op(1, x) : \textbf{if}\ (type(x, \ `+`) = true)\ \textbf{then}\ add(Der(op(i, x)), i = 1 .. nops(x))\ \textbf{elif}\ (type(x, \ `*`) = true)\ \textbf{then}\ expand\left(\frac{x}{y} \cdot Der(y) + y \cdot Der\left(\frac{x}{y}\right)\right) \textbf{elif}\ (type(x, \ `\wedge`) = true)\ \textbf{then}\ op(2, x) \cdot y^{(op(2, x) - 1)} \cdot Der(y)\ \textbf{elif}\ (\ (type(x, function) = true)\ \textbf{or}\ (type(x, symbol) = true))\ \textbf{then}\ S^{\#}(x) \cdot W[1] + S(x) \cdot W[2] + \mathrm{Tau}(x) \cdot W[3] + L^{\#}(x) \cdot W[4] + L(x) \cdot W[5]\ \textbf{else}\ 0\ \textbf{fi}\ \textbf{end}\ \textbf{proc}:$

On exprime le nouveau coframe initial (chapeau) en fonction du premier.
W represente le premier coframe initial et V represente le nouveau coframe initial (chapeau). On a la relation V:=m.W.

frame1 > $m := Matrix([[1, 0, 0, 0, 0], [0, 1, 0, 0, 0], [B, B1, 1, 0, 0], [0, 0, 0, 1, 0], [0, 0, 0, 0, 1]]):$

> $minv := MatrixInverse(m):$

M > $W := minv.Vector([V[1], V[2], V[3], V[4], V[5]]):$

On donne ensuite la nouvelle matrice de groupe:

frame1 > $Ma := Matrix\left([[a \cdot a1^2, 0, 0, 0, 0], [0, a^2 \cdot a1, 0, 0, 0], [0, 0, a \cdot a1, 0, 0], [e1, d, b1, a1, 0], [d1, e, b, 0, a]]\right):$

$$Ma := \begin{bmatrix} a\, a1^2 & 0 & 0 & 0 & 0 \\ 0 & a^2\, a1 & 0 & 0 & 0 \\ 0 & 0 & a\, a1 & 0 & 0 \\ e1 & d & b1 & a1 & 0 \\ d1 & e & b & 0 & a \end{bmatrix} \quad (2)$$

frame1 > $MaInv := MatrixInverse(Ma):$

M > On determine les formes de Maurer Cartan:

M > $Mat := map(evalDG, (ExteriorDerivative(Ma).MaInv));$

frame1 >

$$Mat := \begin{bmatrix} \frac{da}{a} + \frac{2\, da1}{a1} & 0\, dw & 0\, dw & 0\, dw & 0\, dw \\ 0\, dw & \frac{2\, da}{a} + \frac{da1}{a1} & 0\, dw & 0\, dw & 0\, dw \\ 0\, dw & 0\, dw & \frac{da}{a} + \frac{da1}{a1} & 0\, dw & 0\, dw \\ -\frac{e1\, da1}{a\, a1^3} + \frac{de1}{a\, a1^2} & -\frac{d\, da1}{a^2\, a1^2} + \frac{dd}{a^2\, a1} & -\frac{b1\, da1}{a\, a1^2} + \frac{db1}{a\, a1} & \frac{da1}{a1} & 0\, dw \\ -\frac{d1\, da}{a^2\, a1^2} + \frac{dd1}{a\, a1^2} & -\frac{e\, da}{a^3\, a1} + \frac{de}{a^2\, a1} & -\frac{b\, da}{a^2\, a1} + \frac{db}{a\, a1} & 0\, dw & \frac{da}{a} \end{bmatrix} \quad (3)$$

frame1 > $t[1] := \frac{da}{a}$:

frame1 > $t[2] := -\frac{b\, da}{a^2\, a1} + \frac{db}{a\, a1}$:

frame1 > $t[3] := -\frac{d\, da1}{a^2\, a1^2} + \frac{dd}{a^2\, a1}$:

frame1 > $t[4] := -\frac{e\, da}{a^3\, a1} + \frac{de}{a^2\, a1}$:

frame1 > $t[5] := \frac{da1}{a1}$:

frame1 > $t[6] := -\frac{b1\, da1}{a\, a1^2} + \frac{db1}{a\, a1}$:

frame1 > $t[7] := -\frac{d1\, da}{a^2\, a1^2} + \frac{dd1}{a\, a1^2}$:

frame1 > $t[8] := -\frac{e1\, da1}{a\, a1^3} + \frac{de1}{a\, a1^2}$:

M > $FD := FrameData([t[1], t[2], t[3], t[4], t[5], t[6], t[7], t[8], dw, dx, dy, dz1, dz], frame2)$:

M > $DGsetup(FD, [E], [\text{alpha}[1], \text{alpha}[2], \text{alpha}[3], \text{alpha}[4], \alpha^{\#}[1], \alpha^{\#}[2], \alpha^{\#}[3], \alpha^{\#}[4], \sigma^{\#}, \text{sigma}, \text{rho}, \zeta^{\#}, \text{zeta}], verbose);$

The following coordinates have been protected:

$[w, x, y, z1, z, a, a1, b, b1, d, d1, e, e1]$

The following vector fields have been defined and protected:

$[E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, E11, E12, E13]$

The following differential 1-forms have been defined and protected:

$[\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha^{\#}_1, \alpha^{\#}_2, \alpha^{\#}_3, \alpha^{\#}_4, \sigma^{\#}, \sigma, \rho, \zeta^{\#}, \zeta]$

frame name: frame2 **(4)**

frame2 > $Y := Vector([\sigma^{\#}, \text{sigma}, \text{rho}, \zeta^{\#}, \text{zeta}])$:

frame2 > $V := MaInv.Y:$

Les equations de courbure sur les $W[i]$ sont connues :

frame2 > $dW[1] := -K1 \cdot (W[1]\&wedge\ W[2]) + F1 \cdot (W[1]\&wedge\ W[3]) + Q1 \cdot (W[1]\&wedge\ W[4]) + B1 \cdot (W[1]\ \&wedge\ W[5]) + G \cdot (W[2]\ \&wedge\ W[3]) + B1 \cdot (W[2]\ \&wedge\ W[4]) + R \cdot (W[2]\ \&wedge\ W[5]) + (W[3]\&wedge\ W[4]) :$

frame2 > $dW[2] := K \cdot (W[1]\&wedge\ W[2]) + G1 \cdot (W[1]\&wedge\ W[3]) + R1 \cdot (W[1]\&wedge\ W[4]) + B \cdot (W[1]\ \&wedge\ W[5]) + F \cdot (W[2]\ \&wedge\ W[3]) + B \cdot (W[2]\ \&wedge\ W[4]) + Q \cdot (W[2]\ \&wedge\ W[5]) + (W[3]\&wedge\ W[5]) :$

frame2 > $dW[3] := I \cdot J \cdot (W[1]\&wedge\ W[2]) + E^{\#} \cdot (W[1]\&wedge\ W[3]) + P1 \cdot (W[1]\&wedge\ W[4]) + A \cdot (W[1]\ \&wedge\ W[5]) + E \cdot (W[2]\ \&wedge\ W[3]) + A \cdot (W[2]\ \&wedge\ W[4]) + P \cdot (W[2]\ \&wedge\ W[5]) - I \cdot (W[4]\ \&wedge\ W[5]) :$

N > $dW[4] := 0 : dW[5] := 0 :$

frame2 > $dW := Vector([dW[1], dW[2], dW[3], dW[4], dW[5]]) :$

On en deduit les nouvelles courbures initiales:

frame2 > $dV[1] := dW[1]:$

frame2 > $dV[2] := dW[2]:$

frame2 > $dV[3] := evalDG(dW[3] + (Der(B)\&wedge\ W[1]\ ) + B \cdot dW[1] + (\ Der(B1)\&wedge\ W[2]\ ) + B1 \cdot dW[2]) :$

frame2 > $dV[4] := dW[4]:$

frame2 > $dV[5] := dW[5]:$

frame2 > $dV := Vector([dV[1], dV[2], dV[3], dV[4], dV[5]]) :$

frame2 > $\mathrm{Omega} := map(evalDG, Ma.dV) :$

frame2 > $Mat := map(evalDG, (ExteriorDerivative(Ma).MaInv));$

$$Mat := \begin{bmatrix} \alpha_1 + 2\,\alpha^{\#}_1 & 0\,\alpha_1 & 0\,\alpha_1 & 0\,\alpha_1 & 0\,\alpha_1 \\ 0\,\alpha_1 & 2\,\alpha_1 + \alpha^{\#}_1 & 0\,\alpha_1 & 0\,\alpha_1 & 0\,\alpha_1 \\ 0\,\alpha_1 & 0\,\alpha_1 & \alpha_1 + \alpha^{\#}_1 & 0\,\alpha_1 & 0\,\alpha_1 \\ \alpha^{\#}_4 & \alpha_3 & \alpha^{\#}_2 & \alpha^{\#}_1 & 0\,\alpha_1 \\ \alpha^{\#}_3 & \alpha_4 & \alpha_2 & 0\,\alpha_1 & \alpha_1 \end{bmatrix} \tag{5}$$

frame2 > $Mat2 := Mat\ \&MatrixWedge\ Y:$

frame2 > $SE := map(evalDG, (Mat2\ \&MatrixPlus\ \mathrm{Omega})) :$

frame2 > $List := GenerateForms\left([\mathrm{alpha}[1], \mathrm{alpha}[2], \mathrm{alpha}[3], \mathrm{alpha}[4], \alpha^{\#}[1], \alpha^{\#}[2], \alpha^{\#}[3], \alpha^{\#}[4], \sigma^{\#}, \mathrm{sigma}, \mathrm{rho}, \zeta^{\#}, \mathrm{zeta}], 2\right) :$

frame2 > $Torsion :=$ **proc**(S, i, j) **local** $k, X;$ $k := 13 \cdot (i-1) - \frac{i \cdot (i-1)}{2} + j - i;$ $X := GetComponents(S, List);$ $expand(X[k]);$ **end proc**:

frame2 > $result :=$ **proc**(l) **local** $k, t, X;$ $X := 0 : t := expand(GetComponents(l, List)) :$ **for** k **from** 1 **to** 78 **do** $X := X + t[k] \cdot List[k]$ **od**; $X;$ **end proc**:

frame2 > result(SE[1]);

$$\alpha_1 \wedge \sigma^{\#} + 2\,\alpha^{\#}{}_1 \wedge \sigma^{\#} + \left(\frac{B\,d}{a^2\,a1^2} + \frac{R\,d1}{a^3\,a1} + \frac{G\,B}{a^2\,a1} - \frac{B1\,e}{a^3\,a1} - \frac{Q1\,d}{a^2\,a1^2} - \frac{F1\,B1}{a^2\,a1} - \frac{K1}{a^2\,a1}\right)\sigma^{\#} \wedge \sigma + \left(\frac{e1}{a\,a1^2} + \frac{B\,b1}{a\,a1^2} - \frac{B1\,b}{a^2\,a1} - \frac{Q1\,b1}{a\,a1^2} + \frac{F1}{a\,a1}\right)\sigma^{\#} \wedge \rho + \left(-\frac{B}{a1} + \frac{Q1}{a1}\right)\sigma^{\#} \wedge \zeta^{\#} + \frac{B1\,\sigma^{\#} \wedge \zeta}{a} + \left(\frac{d}{a^2\,a1} - \frac{R\,b}{a^3} + \frac{G}{a^2}\right)\sigma \wedge \rho + \frac{a1\,R\,\sigma \wedge \zeta}{a^2} + \rho \wedge \zeta^{\#} \quad (6)$$

frame2 > result(SE[2]);

$$2\,\alpha_1 \wedge \sigma + \alpha^{\#}{}_1 \wedge \sigma + \left(-\frac{B1\,d1}{a^2\,a1^2} + \frac{Q\,d1}{a^2\,a1^2} + \frac{B\,e1}{a\,a1^3} + \frac{F\,B}{a\,a1^2} - \frac{R1\,d}{a\,a1^3} - \frac{G1\,B1}{a\,a1^2} + \frac{K}{a\,a1^2}\right)\sigma^{\#} \wedge \sigma + \left(\frac{d1}{a\,a1^2} - \frac{R1\,b1}{a1^3} + \frac{G1}{a1^2}\right)\sigma^{\#} \wedge \rho + \frac{a\,R1\,\sigma^{\#} \wedge \zeta^{\#}}{a1^2} + \left(\frac{e}{a^2\,a1} + \frac{B1\,b}{a^2\,a1} - \frac{Q\,b}{a^2\,a1} - \frac{B\,b1}{a\,a1^2} + \frac{F}{a\,a1}\right)\sigma \wedge \rho + \frac{B\,\sigma \wedge \zeta^{\#}}{a1} + \left(-\frac{B1}{a} + \frac{Q}{a}\right)\sigma \wedge \zeta + \rho \wedge \zeta \quad (7)$$

frame2 > result(SE[3]);

$$\alpha_1 \wedge \rho + \alpha^{\#}{}_1 \wedge \rho + \left(\frac{P\,d1}{a^3\,a1^2} + \frac{A\,e1}{a^2\,a1^3} + \frac{E\,B}{a^2\,a1^2} - \frac{B\,K1}{a^2\,a1^2} + \frac{G\,B^2}{a^2\,a1^2} + \frac{\mathrm{T}(B)\,B1}{a^2\,a1^2} + \frac{L^{\#}(B)\,d}{a^2\,a1^3} - \frac{L(B1)\,d1}{a^3\,a1^2} - \frac{A\,e}{a^3\,a1^2} + \frac{B^2\,d}{a^2\,a1^3} - \frac{B1^2\,d1}{a^3\,a1^2} + \frac{B1\,K}{a^2\,a1^2} - \frac{G1\,B1^2}{a^2\,a1^2} + \frac{\mathrm{I}\,J}{a^2\,a1^2} - \frac{P1\,d}{a^2\,a1^3} + \frac{L(B)\,e}{a^3\,a1^2} - \frac{L^{\#}(B1)\,e1}{a^2\,a1^3} - \frac{E^{\#}\,B1}{a^2\,a1^2} - \frac{\mathrm{T}(B1)\,B}{a^2\,a1^2} - \frac{B\,B1\,e}{a^3\,a1^2} + \frac{B\,R\,d1}{a^3\,a1^2} - \frac{B\,F1\,B1}{a^2\,a1^2} - \frac{B\,Q1\,d}{a^2\,a1^3} + \frac{B1\,F\,B}{a^2\,a1^2} - \frac{S(B)}{a^2\,a1^2} + \frac{S^{\#}(B1)}{a^2\,a1^2} - \frac{\mathrm{I}\,e1\,e}{a^3\,a1^3} + \frac{\mathrm{I}\,d\,d1}{a^3\,a1^3} - \frac{B1\,R1\,d}{a^2\,a1^3} + \frac{B1\,B\,e1}{a^2\,a1^3} + \frac{B1\,Q\,d1}{a^3\,a1^2}\right)\sigma^{\#} \wedge \sigma + \left(\frac{B1\,d1}{a^2\,a1^2} - \frac{B1\,R1\,b1}{a\,a1^3} + \frac{G1\,B1}{a\,a1^2} + \frac{B\,e1}{a\,a1^3} + \frac{B^2\,b1}{a\,a1^3} - \frac{B\,B1\,b}{a^2\,a1^2} - \frac{B\,Q1\,b1}{a\,a1^3} + \frac{B\,F1}{a\,a1^2} + \frac{L(B)\,b}{a^2\,a1^2} + \frac{L^{\#}(B)\,b1}{a\,a1^3} - \frac{\mathrm{T}(B)}{a\,a1^2} + \frac{\mathrm{I}\,b1\,d1}{a^2\,a1^3} - \frac{\mathrm{I}\,e1\,b}{a^2\,a1^3} - \frac{A\,b}{a^2\,a1^2} - \frac{P1\,b1}{a\,a1^3} + \frac{E^{\#}}{a\,a1^2}\right)\sigma^{\#} \wedge \rho + \left(\frac{B1\,R1}{a1^2} - \frac{B^2}{a1^2} + \frac{B\,Q1}{a1^2} - \frac{L^{\#}(B)}{a1^2} - \frac{\mathrm{I}\,d1}{a\,a1^2} + \frac{P1}{a1^2}\right)\sigma^{\#} \wedge \zeta^{\#} + \left(\frac{B\,B1}{a\,a1} - \frac{L(B)}{a\,a1} + \frac{\mathrm{I}\,e1}{a\,a1^2} + \frac{A}{a\,a1}\right)\sigma^{\#} \wedge \zeta + \left(\frac{B1\,e}{a^3\,a1} + \frac{B1^2\,b}{a^3\,a1} - \frac{B1\,Q\,b}{a^3\,a1} - \frac{B1\,B\,b1}{a^2\,a1^2} + \frac{B1\,F}{a^2\,a1} + \frac{L(B1)\,b}{a^3\,a1} + \frac{L^{\#}(B1)\,b1}{a^2\,a1^2} - \frac{\mathrm{T}(B1)}{a^2\,a1} + \frac{B\,d}{a^2\,a1^2} - \frac{B\,R\,b}{a^3\,a1} + \frac{G\,B}{a^2\,a1} + \frac{\mathrm{I}\,b1\,e}{a^3\,a1^2} - \frac{\mathrm{I}\,d\,b}{a^3\,a1^2} - \frac{P\,b}{a^3\,a1}\right.$$

$$- \frac{A\, b1}{a^2\, a1^2} + \frac{E}{a^2\, a1} \Big) \sigma \wedge \rho + \Big(\frac{B\, B1}{a\, a1} - \frac{L^{\#}(B1)}{a\, a1} - \frac{\mathrm{I}\, e}{a^2\, a1} + \frac{A}{a\, a1} \Big) \sigma \wedge \zeta^{\#} + \Big(-\frac{B1^2}{a^2} + \frac{B1\, Q}{a^2} - \frac{L(B1)}{a^2} + \frac{B\, R}{a^2} + \frac{\mathrm{I}\, d}{a^2\, a1} + \frac{P}{a^2} \Big) \sigma \wedge \zeta + \Big(\frac{B}{a1} - \frac{\mathrm{I}\, b}{a\, a1} \Big) \rho \wedge \zeta^{\#} + \Big(\frac{B1}{a} + \frac{\mathrm{I}\, b1}{a\, a1} \Big) \rho \wedge \zeta - \mathrm{I}\, \zeta^{\#} \wedge \zeta$$

frame2 > *result*(*SE*[5]);

$$\alpha_1 \wedge \zeta + \alpha_2 \wedge \rho + \alpha_4 \wedge \sigma + \alpha^{\#}_3 \wedge \sigma^{\#} + \Big(\frac{e\, K}{a^3\, a1^3} - \frac{d1\, K1}{a^3\, a1^3} + \frac{b\, S^{\#}(B1)}{a^3\, a1^3} - \frac{b\, S(B)}{a^3\, a1^3} + \frac{R\, d1^2}{a^4\, a1^3} - \frac{b\, B\, F1\, B1}{a^3\, a1^3} + \frac{b\, B1\, F\, B}{a^3\, a1^3} + \frac{b\, B\, R\, d1}{a^4\, a1^3} - \frac{b\, B\, B1\, e}{a^4\, a1^3} - \frac{b\, B\, Q1\, d}{a^3\, a1^4} + \frac{b\, B1\, Q\, d1}{a^4\, a1^3} + \frac{b\, B1\, B\, e1}{a^3\, a1^4} - \frac{b\, B1\, R1\, d}{a^3\, a1^4} + \frac{\mathrm{I}\, b\, d\, d1}{a^4\, a1^4} - \frac{\mathrm{I}\, b\, e1\, e}{a^4\, a1^4} + \frac{e\, F\, B}{a^3\, a1^3} - \frac{e\, G1\, B1}{a^3\, a1^3} + \frac{d1\, G\, B}{a^3\, a1^3} - \frac{d1\, F1\, B1}{a^3\, a1^3} - \frac{b\, E^{\#}\, B1}{a^3\, a1^3} + \frac{b\, G\, B^2}{a^3\, a1^3} - \frac{b\, B\, K1}{a^3\, a1^3} + \frac{b\, E\, B}{a^3\, a1^3} - \frac{b\, G1\, B1^2}{a^3\, a1^3} + \frac{b\, B1\, K}{a^3\, a1^3} - \frac{b\, \mathrm{T}(B1)\, B}{a^3\, a1^3} + \frac{\mathrm{I}\, b\, J}{a^3\, a1^3} + \frac{b\, \mathrm{T}(B)\, B1}{a^3\, a1^3} - \frac{2\, e\, B1\, d1}{a^4\, a1^3} + \frac{e\, Q\, d1}{a^4\, a1^3} + \frac{e\, B\, e1}{a^3\, a1^4} - \frac{e\, R1\, d}{a^3\, a1^4} + \frac{d1\, B\, d}{a^3\, a1^4} - \frac{d1\, Q1\, d}{a^3\, a1^4} - \frac{b\, P1\, d}{a^3\, a1^4} + \frac{b\, B^2\, d}{a^3\, a1^4} - \frac{b\, A\, e}{a^4\, a1^3} + \frac{b\, A\, e1}{a^3\, a1^4} + \frac{b\, P\, d1}{a^4\, a1^3} - \frac{b\, B1^2\, d1}{a^4\, a1^3} - \frac{b\, L(B1)\, d1}{a^4\, a1^3} - \frac{b\, L^{\#}(B1)\, e1}{a^3\, a1^4} + \frac{b\, L^{\#}(B)\, d}{a^3\, a1^4} + \frac{b\, L(B)\, e}{a^4\, a1^3} \Big) \sigma^{\#} \wedge \sigma + \Big(-\frac{b\, B1\, R1\, b1}{a^2\, a1^4} + \frac{b\, G1\, B1}{a^2\, a1^3} + \frac{b\, B\, e1}{a^2\, a1^4} + \frac{b\, B^2\, b1}{a^2\, a1^4} - \frac{B\, B1\, b^2}{a^3\, a1^3} - \frac{b\, B\, Q1\, b1}{a^2\, a1^4} + \frac{b\, B\, F1}{a^2\, a1^3} + \frac{L(B)\, b^2}{a^3\, a1^3} + \frac{b\, L^{\#}(B)\, b1}{a^2\, a1^4} - \frac{b\, \mathrm{T}(B)}{a^2\, a1^3} + \frac{\mathrm{I}\, b\, b1\, d1}{a^3\, a1^4} - \frac{\mathrm{I}\, e1\, b^2}{a^3\, a1^4} - \frac{A\, b^2}{a^3\, a1^3} - \frac{b\, P1\, b1}{a^2\, a1^4} + \frac{b\, E^{\#}}{a^2\, a1^3} + \frac{e\, d1}{a^3\, a1^3} - \frac{e\, R1\, b1}{a^2\, a1^4} + \frac{e\, G1}{a^2\, a1^3} + \frac{d1\, e1}{a^2\, a1^4} + \frac{d1\, B\, b1}{a^2\, a1^4} - \frac{d1\, Q1\, b1}{a^2\, a1^4} + \frac{d1\, F1}{a^2\, a1^3} \Big) \sigma^{\#} \wedge \rho + \Big(\frac{b\, B1\, R1}{a\, a1^3} - \frac{b\, B^2}{a\, a1^3} + \frac{b\, B\, Q1}{a\, a1^3} - \frac{b\, L^{\#}(B)}{a\, a1^3} - \frac{\mathrm{I}\, b\, d1}{a^2\, a1^3} + \frac{b\, P1}{a\, a1^3} + \frac{e\, R1}{a\, a1^3} - \frac{d1\, B}{a\, a1^3} + \frac{d1\, Q1}{a\, a1^3} \Big) \sigma^{\#} \wedge \zeta^{\#} + \Big(\frac{B\, B1\, b}{a^2\, a1^2} - \frac{L(B)\, b}{a^2\, a1^2} + \frac{\mathrm{I}\, e1\, b}{a^2\, a1^3} + \frac{A\, b}{a^2\, a1^2} + \frac{B1\, d1}{a^2\, a1^2} \Big) \sigma^{\#} \wedge \zeta + \Big(\frac{2\, e\, B1\, b}{a^4\, a1^2} + \frac{B1^2\, b^2}{a^4\, a1^2} - \frac{B1\, Q\, b^2}{a^4\, a1^2} - \frac{b\, B1\, B\, b1}{a^3\, a1^3} + \frac{b\, B1\, F}{a^3\, a1^2} + \frac{L(B1)\, b^2}{a^4\, a1^2} + \frac{b\, L^{\#}(B1)\, b1}{a^3\, a1^3} - \frac{b\, \mathrm{T}(B1)}{a^3\, a1^2} + \frac{b\, B\, d}{a^3\, a1^3} - \frac{B\, R\, b^2}{a^4\, a1^2} + \frac{b\, G\, B}{a^3\, a1^2} + \frac{\mathrm{I}\, b\, b1\, e}{a^4\, a1^3} - \frac{\mathrm{I}\, d\, b^2}{a^4\, a1^3} - \frac{P\, b^2}{a^4\, a1^2} - \frac{b\, A\, b1}{a^3\, a1^3} + \frac{b\, E}{a^3\, a1^2} + \frac{e^2}{a^4\, a1^2} - \frac{e\, Q\, b}{a^4\, a1^2} - \frac{e\, B\, b1}{a^3\, a1^3} + \frac{e\, F}{a^3\, a1^2} \tag{9}$$

$$+\frac{d\,d1}{a^3\,a1^3}-\frac{d1\,R\,b}{a^4\,a1^2}+\frac{d1\,G}{a^3\,a1^2}\Big)\,\sigma\wedge\rho+\Big(\frac{B\,B1\,b}{a^2\,a1^2}-\frac{b\,L^{\#}(B1)}{a^2\,a1^2}-\frac{\mathrm{I}\,b\,e}{a^3\,a1^2}+\frac{A\,b}{a^2\,a1^2}$$

$$+\frac{B\,e}{a^2\,a1^2}\Big)\,\sigma\wedge\zeta^{\#}+\Big(-\frac{B1^2\,b}{a^3\,a1}+\frac{B1\,Q\,b}{a^3\,a1}-\frac{L(B1)\,b}{a^3\,a1}+\frac{B\,R\,b}{a^3\,a1}+\frac{\mathrm{I}\,d\,b}{a^3\,a1^2}+\frac{P\,b}{a^3\,a1}$$

$$-\frac{B1\,e}{a^3\,a1}+\frac{e\,Q}{a^3\,a1}+\frac{R\,d1}{a^3\,a1}\Big)\,\sigma\wedge\zeta+\Big(\frac{b\,B}{a\,a1^2}-\frac{\mathrm{I}\,b^2}{a^2\,a1^2}+\frac{d1}{a\,a1^2}\Big)\,\rho\wedge\zeta^{\#}+\Big(\frac{B1\,b}{a^2\,a1}$$

$$+\frac{\mathrm{I}\,b\,b1}{a^2\,a1^2}+\frac{e}{a^2\,a1}\Big)\,\rho\wedge\zeta-\frac{\mathrm{I}\,b\,\zeta^{\#}\wedge\zeta}{a\,a1}$$

frame2 >