PhysRevD.67.084023

```
1   from shared import *
2   import cdblib
3
4   jsonfile = 'prd67.json'
5   cdblib.create (jsonfile)
6
7   # ----------------------------------------------------------------------------------
8   # eqn 19 = hamiltonian constraint
9   lhs := 0.                                                      # cdb(prd67.eq19.lhs,lhs)
10  rhs := R - ABar_{a b} ABar^{a b} + (2/3) trK**2.              # cdb(prd67.eq19.rhs,rhs)
11
12  cdblib.put ('prd67.eq19.lhs',lhs,jsonfile)
13  cdblib.put ('prd67.eq19.rhs',rhs,jsonfile)
14
15  # ----------------------------------------------------------------------------------
16  # eqn 20 = momentum constraint
17  lhs := 0.                                                      # cdb(prd67.eq20.lhs,lhs)
18  rhs := \partial_{a}(ABar^{i a})
19        +6 ABar^{i a} \partial_{a}(\phi)
20        + ABar^{a b} GammaBar^{i}_{a b}
21        - (2/3) gBar^{i a} \partial_{a}(trK).                   # cdb(prd67.eq20.rhs,rhs)
22
23  cdblib.put ('prd67.eq20.lhs',lhs,jsonfile)
24  cdblib.put ('prd67.eq20.rhs',rhs,jsonfile)
25
26  # ----------------------------------------------------------------------------------
27  # eqn 27 = conformal transform of \Gamma
28  lhs := \Gamma^{a}_{b c}.                                       # cdb(prd67.eq27.lhs,lhs)
29  rhs :=  GammaBar^{a}_{b c}
30        + 2 gBar^{a}_{c} \partial_{b}(\phi)
31        + 2 gBar^{a}_{b} \partial_{c}(\phi)
32        - 2 gBar_{b c} gBar^{a e} \partial_{e}(\phi).          # cdb(prd67.eq27.rhs,rhs)
33
34  cdblib.put ('prd67.eq27.lhs',lhs,jsonfile)
35  cdblib.put ('prd67.eq27.rhs',rhs,jsonfile)
```

$$0 = \mathcal{H} = R - \bar{A}_{ab}\bar{A}^{ab} + \frac{2}{3}\operatorname{tr}K^2 \qquad (\texttt{prd67.eq19.rhs})$$

$$0 = \exp(4\phi)\mathcal{D}^i = \partial_a\bar{A}^{ia} + 6\,\bar{A}^{ia}\partial_a\phi + \bar{A}^{ab}\bar{\Gamma}^i_{ab} - \frac{2}{3}\,\bar{g}^{ia}\partial_a\operatorname{tr}K \qquad (\texttt{prd67.eq20.rhs})$$

$$\Gamma^a_{\,bc} = \bar{\Gamma}^a_{\,bc} + 2\,\bar{g}^a_{\,c}\partial_b\phi + 2\,\bar{g}^a_{\,b}\partial_c\phi - 2\,\bar{g}_{bc}\bar{g}^{ae}\partial_e\phi \qquad (\texttt{prd67.eq27.rhs})$$