

We have already studied of $H_{GF}^5(\mathfrak{ham}_2^0, \mathfrak{sp}(2, \mathbb{R}))_{10}$, GB_e , GB_k and $GB_{k/e}$, also of $H_{GF}^7(\mathfrak{ham}_2, \mathfrak{sp}(2, \mathbb{R}))_8$, \overline{GB}_e , \overline{GB}_k and $\overline{GB}_{k/e}$.

We calculate $\omega \wedge h(\mathbf{w}_j)$ and we have $\bar{h} = -9y_7 + 105y_{10} + 3y_{11} + 14y_{12}$.

We will check $\text{NormalForm}(\bar{h}, \overline{GB}_e, \text{Ord}_y)$ does not vanish. Then a proof to a Theorem in The Gel'fand-Kalinin-Fuks class and characteristic classes of transversely symplectic foliations, *arXiv:0910.3414*, October 2009 by D. Kotschick and S. Morita will be done.

We remark that in this note we added some line breaks so that we get better look and we use `nd_gr()` instead of `gr()`.

Final stage:

Our source file for Risa/Asir is this:

```
YList = [y1,y2,y3,y4,y5,y6,y7,y8,y9,y10,y11,y12,y13,y14]$
ord(YList)$
```

```
GBe = [3*y10-3*y11-20*y12+6*y14,
      100*y8+36*y9-15*y11-420*y12-420*y13+350*y14,
      -300*y7-84*y9+135*y11+980*y12-420*y13-350*y14,
      100*y6+204*y9-135*y11-1380*y12-180*y13+750*y14,
      40*y5-12*y9+15*y11-460*y12-60*y13-590*y14,
      4800*y4+84*y9+2565*y11+6020*y12+420*y13-10850*y14,
      1600*y3-84*y9+1035*y11-6020*y12-420*y13-5950*y14,
      400*y2-12*y9-195*y11-1860*y12-5660*y13+950*y14,
      -450*y1-24*y9-315*y11-220*y12-120*y13-1250*y14]$
```

```
H = -9 * y7 + 105 * y10 + 3 * y11 + 14* y12$
```

```
p_nf(H, GBe, YList, 0);
end$
```

The output of Groebner Basis is the next: _____

```
-252*y9-10395*y11-68460*y12-1260*y13+19950*y14
```