Co.Al.A.R.

Computational Algebraic Analysis Results

THIS PAGE IS DEVOTED TO SOME RESULTS IN **CLIFFORD ANALYSIS** and related topics

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==> NOETHERIAN OPERATORS [DSS]:

Some experiments performed using different algorithms, includes CPU times

variables	multiplicity	**IDEAL**	**CPU TIME** (CoCoA 4.5 on Toshiba Sat. 2455) - 3.4 from [DSS], following an idea of [MMM] - (40) from [Ob96], using linear algebra - 3.8 from [DSS], using forward reduction - 3.17 from [DSS], using backward reduction	**OPERATORS**
2	4	(x^2-y ,y^2)	0.75" 0.14" 0.37" 0.08"	1 , dx , dx^2+dy , dx^3+dxdy
2	8	(x^4-xy-y, y^2)	8.31" 0.90" 0.28 " 0.15"	1 , dx , dx^2 , dx^3 , dx^4+dy , dx^5+dx^4+dxdy , dx^6+dx^5+dx^2dy , dx^7+dx^6+dx^3dy
2	9	(x^3-y, y^3)	2' 9" 1.53" 0.34" 0.22"	1 , dx , dx^2 , dx^3+dy , dx^4+dxdy , dx^5+dx^2dy , dx^6+dx^3dy+dy^2 , dx^7+dx^4dy+dxdy^2 , dx^8+dx^5dy+dx^2dy^2
3	8	(x^2-z, y^2-z, z^2)	12' 9.18" 0.99" 0.19"	1 , dy , dx , dxdy , dx^2+dy^2+dz , dx^2dy+dy^3+dydz ,

				dx^3+dxdy^2+dxdz , dx^3dy+dxdy^3+dxdydz
3	4	(x^2-ty ,y^2)	dim(I)>0 dim(I)>0 0.64" not yet available	1 , dx , tdx^2+dy , tdx^3+dxdy
4	8	(x^4-txy-sy, y^2)	dim(I)>0 dim(I)>0 2.61" not yet available	1 , dx , dx^2 , dx^3 , sdx^4+dy , sdx^5+tdx^4+dxdy , sdx^6+tdx^5+dx^2dy , sdx^7+tdx^6+dx^3dy
5	8	(x^2-tz, y^2-sz, z^2)	dim(I)>0 dim(I)>0 12.73" not yet available	1 , dy , dx , dxdy , sdy^2+tdx^2+dz , sdy^3+tdx^2dy+dydz , sdxdy^2+tdx^3+dxdz , sdxdy^3+tdx^3dy+dxdydz

REFERENCES: (click on [XXX] to get the AMS reference #)

[DSS] A. Damiano, I. Sabadini, D. Struppa, *Computational Methods for the Construction of a Class of Noetherian Operators,* Submitted

[Ob96] U. Oberst**,** *Finite-dimensional systems of partial differential or difference equations*. Adv. in Appl. Math. 17 (1996), no. 3, 337--356.

[MMM] Marinari, M. G.; Möller, H. M.; Mora, T. *On multiplicities in polynomial system solving*. *Trans. Amer.* Math. Soc. 348 (1996), no. 8, 3283--3321.