pfpcoh (cohomology/homology groups for p F q)

1 pFq ()

pFq ($_pF_q$) ().

OpenXM/Risa/Asir ,

```
load("pfpcoh.rr")$ load("pfphom.rr")$
```

.

1.0.1 pfp_omega

pfp_omega(*P*)

: It returns the Gauss-Manin connection Omega for the generalized hypergeo-
metric function P F P-1 (aa1,aa2, ...; cc1, cc2, ...;x) .

Description:

Define a vector valued function Y of which elements are generalized hypergeo-
metric function f_1=F and f_2=xdf_1/dx, f3=xd f_2/dx, ... It satisfies dY/dx=
Omega Y. Generalized hypergeometric function is defined by the series p F
p-1(aa1,aa2, ...; cc1, cc2, ...;x) = sum(k=0,infty; (aa1)_k (aa2)_k .../((1)_k
(cc1)_k (cc2)_k ...) x^k)

Example:

```
pfp_omega(3);
```

1.0.2 pfpcoh_intersection

pfpcoh_intersection(*P*)

: pfpcoh_intersection(*P*) returns an intersection matrix for cocycles associated
to the generalized hypergeometric function p F_(p-1).

Description:

This program pfpcoh.rr computes an intersection matrix S of cocycles of p F
p-1 and compares it with the matrix obtained by solving a differential equation
for intersection matrix.

Algorithm:

Ohara, Sugiki, Takayama, Quadratic Relations for Generalized Hypergeometric
Functions p F p-1

Example:

```
load("pfpcoh.rr")$
S=pfpcoh_intersection(3);
```

Author : K.Ohara

1.0.3 pfphom_intersection

pfphom_intersection(*P*)

: intersection matrix of homology cycles.

Description:

Computing intersection matrix of cycles associated to p F_-(p-1). As to the meaning of parameters c1, c2, c3, ..., see the paper Ohara, Kyushu J. Math. Vol. 51 PP.123.

Algorithm:

Ohara, Sugiki, Takayama, Quadratic Relations for Generalized Hypergeometric Functions p F p-1

Example:

```
SS = pfphom_intersection(3)$
```

You get the intersection matrix of homologies for 3 F 2.

Author : K.Ohara

1.0.4 `pfphom_monodromy_pair_kyushu`

`pfphom_monodromy_pair_kyushu(P)`
:

Description:

It returns the pair of monodromy matrices.

Algorithm:

Ohara, Kyushu J. Math. Vol.51 PP.123 (1997)

Example:

```
MP = pfphom_monodromy_pair_kyushu(3)$
```

You get a pair of monodromy matricies for 3F2 standing for two paths encircling 0 and 1.

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