

ox_pari

Risa/Asir ox_pari サーバ
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by Risa/Asir committers

1 ox_pari について

ox_pari は数論システム pari のサーバである. pari 関数の呼び出し方法は

```
pari(関数名, 引数 1, ...);
```

サーバーに登録されている関数名は次節を参照.

Pari/gp は Bordeaux 大学で開発されている数論システムである. 次の web サイトを参照.

- [pari-gp] <http://pari.math.u-bordeaux.fr/index.html>

2 ox_pari 関数

2.1 ox_pari

`pari(func, arg1, arg2, ...)`
 :: pari 関数 *func* を呼び出す.

return Pari 関数による計算結果

argn Pari 関数への引数

- ox_pari サーバは自動的にスタートする. サーバの番号を得たい場合は `ctrl("oxpari_id")` または `ox_get_serverinfo()` 関数を用いる. ox_pari サーバへ中断命令, shutdown 命令を送るには `ox_reset(サーバ番号)`, `ox_shutdown(サーバ番号)`. これらの関数については Risa/Asir マニュアルを参照(たとえば <http://www.openxm.org> の文書(documents)).
- pari library の関数の解説は <https://pari.math.u-bordeaux.fr/dochtml/html/> を参照.
- 下記のテーブルに記載されている pari version 2.11.4 の library 関数を呼び出せる. gp での関数名と異なってる場合があるので注意.

```
/* type=1 : one num/poly/mat arg */
/* type=2 : 1starg=num/poly/mat arg, 2ndarg=0(flag) */
```

```
struct parif parif_tab[] = {
/* (ulong)allocatemoremem(ulong) */
{"allocatemem", (GEN (*)())allocatemoremem, 0},
/* num/num */
{"abs", gabs, 1},
{"erfc", gerfc, 1},
{"arg", garg, 1},
{"isqrt", racine, 1},
{"gamma", ggamma, 1},
{"zeta", gzeta, 1},
{"floor", gfloor, 1},
{"frac", gfrac, 1},
{"imag", gimag, 1},
{"conj", gconj, 1},
{"ceil", gceil, 1},
{"isprime", gisprime, 2},
{"bigomega", gbigomega, 1},
{"denom", denom, 1},
{"numer", numer, 1},
{"lngamma", glgamma, 1},
{"logagm", glogagm, 1},
{"classno", classno, 1},
{"dilog", dilog, 1},
{"disc", discsr, 1},
{"discf", discf, 1},
{"nextprime", nextprime, 1},
{"eintg1", eint1, 1},
{"eta", eta, 1},
{"issqfree", gissquarefree, 1},
{"issquare", gcarreparfait, 1},
{"gamh", ggamd, 1},
{"hclassno", classno3, 1},
```

```

/* num/array */
{"binary",binaire,1},
{"factorint",factorint,2},
{"factor",Z_factor,1},
{"cf",gcf,1},
{"divisors",divisors,1},
{"smallfact",smallfact,1},

/* poly/poly */
{"centerlift",centerlift,1},
{"content",content,1},

/* poly/array */
{"galois",galois,1},
{"roots",roots,1},
{"factpol",factpol,1},

/* mat/mat */
{"adj",adj,1},
{"l1l",l1l,1},
{"l1lgen",l1lgen,1},
{"l1lgram",l1lgram,1},
{"l1lgramgen",l1lgramgen,1},
{"l1lgramint",l1lgramint,1},
{"l1lgramkerim",l1lgramkerim,1},
{"l1lgramkerimgen",l1lgramkerimgen,1},
{"l1lint",l1lint,1},
{"l1lkerim",l1lkerim,1},
{"l1lkerimgen",l1lkerimgen,1},
{"trans",gtrans,1},
{"eigen",eigen,1},
{"hermite",hnf,1},
{"mat",gtomat,1},
{"matrixqz2",matrixqz2,1},
{"matrixqz3",matrixqz3,1},
{"hess",hess,1},
{"ker",ker,1},
{"keri",keri,1},
{"kerint",kerint,1},
{"kerintg1",kerintg1,1},

/* mat/poly */
{"det",det,1},
{"det2",det2,1},

/* not examined yet */
{"image",image,1},
{"image2",image2,1},
{"indexrank",indexrank,1},
{"indsort",indexsort,1},
{"initalg",initalg,1},
{"isfund",gisfundamental,1},
{"ispsp",gispsp,1},
{"jacobi",jacobi,1},
{"jell",jell,1},
{"length",(GEN(*)())glength,1},
{"lexsort",lexsort,1},
{"lift",lift,1},

```

```

{"lindep", lindep, 1},
{"modreverse", polymodrecip, 1},
{"mu", gmu, 1},
{"norm", gnorm, 1},
{"norml2", gnorml2, 1},
{"numdiv", numbddiv, 1},
{"omega", gomega, 1},
{"order", order, 1},
{"ordred", ordred, 1},
{"phi", phi, 1},
{"pnqn", pnqn, 1},
{"primroot", gener, 1},
{"psi", gpsi, 1},
{"quadgen", quadgen, 1},
{"quadpoly", quadpoly, 1},
{"recip", polrecip, 1},
{"redreal", redreal, 1},
{"regula", regula, 1},
{"reorder", reorder, 1},
{"rhoreal", rhoreal, 1},
{"sigma", sumdiv, 1},
{"signat", signat, 1},
{"simplify", simplify, 1},
{"smith", smith, 1},
{"smith2", smith2, 1},
{"sort", sort, 1},
{"sqr", gsqr, 1},
{"sqred", sqred, 1},
{"sqr", gsqr, 1},
{"supplement", suppl, 1},
{"trace", gtrace, 1},
{"trunc", gtrunc, 1},
{"unit", fundunit, 1},
{"wf", wf, 1},
{"wf2", wf2, 1},
};

```

呼び出し例, $\text{Ker}(P: \mathbb{Z}^4 \rightarrow \mathbb{Z}^2)$ の \mathbb{Z} 基底を求める.

```
pari(kerint, newmat(2, 4, [[1, 1, 1], [0, 1, 3, 4]]));
```

kerint についての情報は <https://pari.math.u-bordeaux.fr/dochtm1/html/> を見よ(gpでの函数名は matkerint).

参照

ChangeLog

- OpenXM/src/ox_pari/pari_ftab.c に呼び出し可能な函数のテーブルがある.

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