## CoCoALib



| configure script: give summary (...) | Closed 100\% |
| :--- | :--- |
| NumDigits: sometimes gives wrong (...) | Closed 100\% |
| IsMaximal, IsPrimary for IDEAL (...) | Closed 100\% |
| New function: FrobeniusMat | Closed 100\% |
| BigRat: read from a string in "decimal" (...) | Closed 100\% |
| GBasis verbose mode | Closed 100\% |
| ReadExpr: cannot handle exponent (...) | Closed 100\% |
| ReadExpr: misreads 2/3^4 | Closed 100\% |
| New function: IsSqFree | Closed 100\% |
| new file for old functions: obsolescent.C | Closed 100\% |
| RandomUnimodularMat - random unimodular | (...)Closed 100\% <br> determinant: fails for 0x0 matrix (...) |
| Closed 100\% |  |
| New function: HasGBasis | Closed 100\% |
| New function: ReducedGBasis | Closed 100\% |
| CheckForInterrupt does not work (...) | Closed 100\% |
| Which ostream for verbose/obsolescent (...) | Closed 100\% |
| In scripts: use portable test for (...) | Closed 100\% |
| square function | Closed 100\% |
| Bruns SEGG: SparsePolylter/DMPI (...) | Closed 100\% |
| ReducedGBasis for RingWeyl (and (...) | Closed 100\% |
| CPP flags in installed library | Closed 100\% |
| LogStream: stream for log output | Closed 100\% |
| Several tests fail when threadsafe-hack (...) | Closed 100\% |
| ExternalLibs: function for getting (...) | Closed 100\% |


| Add links to examples in documentation |
| :--- |
| matrix - MatrixView |
| Index page for html documentation |
| QuotientRing problem |
| Shorter simpler names for some (...) |
| gcd: multivariate over non-prime (...) |
| Brand new symbol(s) |
| Separate ThreadsafeCounter from (...) |
| Cleanup doc for rings |
| Integer operations |
| CoCoALib - CoCoALib-0.9952 |
| p-th root |
| CFApprox: division by zero |
| Normaliz: "double" cone for speed (...) |
| NBM: add SparsePolyRing as argument (...) |
| Better RingElems |
| Leading form |
| AreMonomials |
| Rings: default ctor \& assignment |
| Review the utility of RefRingElem |
| CoCoALib - CoCoALib-0.9953 |
| polynomial coefficient extraction (...) |
| implement creation of a PPMonoidElement (...) |
| Rename PPMonoidEvZZ? |
| Polynomial content |
| Names for random streams |
| Machinelnt or long as fn arg type (...) |
| CoCoA4io |
| Porting "IdealOfPoints" |
| change long args in matrices into (...) |
| Revise interface to SmallFpImpl (...) |
| Doc \& example for convert |
| IsHomog: should it throw an error (...) |
| Add homog (homogenized) for ideal |


| Exponent range (in power products) |
| :--- |
| PPMonoids: check for exponent overflow (...) |
| Rational approximation |
| Add fault tolerant rational reconstruction (...) |
| PPMonoid pseudo-ctors without symbol (...) |
| Equality of (sub)modules |
| DenseUPolyClean uses size_t |
| "configure" does not set BOOST (...) |
| IdealOfPoints: gens are actually (..) |
| New function BinRepr (was BinExp, (...) |
| Store unique copy of QQ[t_1..t_n] (...) |
| CoCoALib - CoCoALib-0.99531 |
| Squarefree factorization - Alessio (...) |
| Squarefree factorization - overhead |
| Squarefree factorization - generic (...) |
| Squarefree factorization - for (...) |
| Squarefree factorization - (...) |
| Squarefree factorization (...) |
| Squarefree factorization (...) |
| Squarefree factorization - (...) |
| Squarefree factorization - (..) |
| Buchberger-Moeller: generic impl |
| add CoeffVecWRT to cocoalib |
| Colon of zero ideal fails (zero-divisors) |
| problem loading library.H (parallel (...) |
| CoCoALib - CoCoALib-0.99532 |
| CoCoA website: update web page (...) |
| Squarefree factorization |
| Squarefree factorization - (...) |
| Conversion functions -- documentation |
| OrdvArith documentation needs rewriting |
| Function to get the Hilbert Polynomial (...) |
| ReadExpr: input polynomials in (...) |
| myDeriv for RingDenseUPolyClean (...) |

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AsINT and AsRAT -- ConvertTo<BigInt> (...)
Update/Improve geobucket documentation
IsDivisible for RingElem with nice (...)
NewZZmod and NewRingFp: improve (...)
LongRange(a,b) returning vector (...)
function (CoCoALib) for minimal (...)
Check consistency of template class (...)
RingElem ctor from mpz_t (from (...)
design of factorization template (...)
OrdvArith: use of a single buffer (...)
New fn: NumPartitions
ex-Normaliz2-overflow.in too long (...)
ConvertTo with optional arg to (...)
Zero to the power zero,0^0
ideal: minimalize or minimalized?
CoCoA website: CoCoALib-0.99532
CoCoALib - CoCoALib-0.99533 Easter14
Coefficient extraction
implement "binomial" (coefficient) (...)
BigInt - NumTheory
Rename MatrixViews
ZeroMat & FilledMat
Recognizing finite fields
Automatic conversion from bool3 (...)
How to return a Hilbert Series (...)
Notes for adding/removing files (...)
DynamicBitset example using LPP
Valgrind: keep CoCoALib at 0 memory (...)
Remove denominators: QQ[x] -> ZZ[x] (...)
Problems with DenseMatImpl::myResize
IsZeroDivisor
add DeleteCol, DeleteRow
IsDivisible -- exact semantics?
deg(F,X) instead of MaxExponent(F,X) (...)
```

[^0]| CoCoALib-Normaliz interface: cannot (...) |
| :--- |
| Valid symbol heads |
| CmpAbs for RingElem |
| Hilbert crashes with > 100 indeterminates |
| Example for PPVector: ex-PPVector |
| BaseRing for all rings |
| (Hilbert-) quasi-polynomials |
| CoCoALib - CoCoALib-0.99535 Sep14 |
| Subtle ref count bug for poly rings (...) |
| problem with "matrix" argument (...) |
| Release: CoCoALib-0.99535 |
| CoCoALib - CoCoALib-0.99536 June 2015 |
| Compute inverse in quotient ring (...) |
| Release: CoCoALib-0.99536 |
| Modulus (for CRTMill) ambiguous |
| Inverse of a matrix over ZZ |
| NumTheory: sieve of Eratosthenes |
| Ambiguous: rank for matrix (in (...) |
| Clean test-FreeModule1 |
| Move code in test file into namespace (...) |
| QBGenerator crashes |
| RatReconstructByLattice fails in (...) |
| power for PPs is too slow |
| Fault tolerant rational reconstruction: (...) |
| DetDirect calls myAddMul with 0 (...) |
| Interrupt mechanism |
| CheckForInterrupt: string arg to (...) |
| Move code in examples into namespace (...) |
| CoCoALib - CoCoALib-0.99538 summer 2015 |
| Release: CoCoALib-0.99538 (together (...) |
| RandomSubsetlndices, RandomTuplelndices? |
| New function for making list of (...) |
| CoCoALib - CoCoALib-0.99540 Feb 2016 |
| Janet Bases: check and include (...) |

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BigInt ctor from a machine integer
OrdMat: should it be a reference (...)
Make SmallFplmpl safer to use
Convert a PPMonoidElem to RingElem (...)
ExternalLib-GFan: first prototype
DMPZmerge: make non-recursive
FloatStr prints a NUL character
abs for Machinelnt
Add new fn InvModNoCheck
ZeroMat and IdentityMat should (...)
AssignZero for matrix
ILogBase: change name?
Add new fn SimplestBinaryRatBetween
Rename isqrt to FloorSqrt (following (...)
GradingMat: does anyone need it?
NewMatMinimize, NewMatCompleteOrd (...)
IsTermOrdering
Fn names: LexMat or MatLex; StdDegRevLexMat (...)
Use MachineInt instead of long (...)
primary.cocoa5
Fix test failures (after revising (...)
SmallFpImpl: export fns for a fixed (...)
CoCoALib - CoCoALib-0.99542 spring 2016
    Implement MinPoly in CoCoALib
CoCoALib - CoCoALib-0.99560
    matrix constructors
    GlobalManager: registration of (...)
    Use BOOST lib default location (...)
    BOOST -- how it could help in CoCoALib
    implement IsPrime3, IsMaximal3
    Release: CoCoALib-0.99560 (together (...)
    Tidy CoCoA root directory
    Temporary directories used during (...)
    Add graeffe function?
```


## Time limit: let user specify time (...) Module index component in internal (...)

Makefile_dependencies in src/tests/
Stats in GBMill (GReductor)
frobby (v0.9.0) does not compile (...)
Configuration: where to keep source (...)
NumTheory: behaviour of InvMod (...)
compilation on fedora 23: some (...)
CoCoALib function for radical (or (...)
PPOrderingCtor: name of mem fn (...)
ReadExpr is too slow on large polys
My first compilations with clang
General verbose mode?
configure: possibly ignore GMP (...)
SmallestNonDivisor -- new fn
configuration: include -std=c++03 (...)
IsInRadical: case of homog ideal
Split poly into homog parts
Improvement: how to sort QuotientBasis?
LF curiously slow (breaking a poly (...)
ReadExpr(P, string) and RingElem(P, (...)
New function: IdealOfGBasis, IdealOfMinGens (...)
CoCoALib version in Documentation (...)
Catching an (expected) error
Bug in MinPolyModular (ugly prime)
Design: should we allow an ideal (...)
makefile: ungraceful when interrupted
ideal() * RingElem gives error
factor in $\mathrm{ZZ}[\mathrm{x}]$ gives errors
MinPolyQuot: check input (was: (...)
New design for interrupt mechanism
MinPolyQuot: runs out of primes
ExternaLib-MathSAT: first prototype
Rename ERR::SERIOUS to ERR::ShouldNeverGetHere

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Bug in MinPolyModular (insufficient (...)
Implement RootBound
New fn: IsCoprime (whenever gcd (...)
Compilaton with --debug configuration (...)
Polynomial multiplication wrong (...)
File names, coding conventions: (...)
CoCoALib - CoCoALib-0.99600
Porting "IdealOfProjectivePoints"
New file: BigRatOps
port to CoCoALib: Homomorphism (...)
ExternalLib: simplify configuration
IsPositiveGrading -- really need (...)
Doc for BigInt, BigIntOps, BigRat (...)
New function: MinPoly of RingElem (...)
New function: PrimaryDecomposition0 (...)
Makefile: install target for CoCoALib
coefficients for MinPoly e Frobenius
MinPolyQuot: missing doc
Determinant of matrix over QQ (whose (...)
PrevPrime and NextPrime anomalies
Move examples directory into doc (...)
New function: SubmoduleOfMinGens
Sturm sequence
File names, coding conventions: (...)
Release: CoCoALib-0.99600 (together (...)
SmallFpImpl: new ctor arg to say (...)
Create a new "prime source" iterator
New function: MinPolyQuotHeuristic (...)
Add global enum "verify/DontVerify"
Check semantics of NoSmallFactorSeq
Split SparsePolyRing.C in smaller (...)
MinPoly over QQ: verification may (...)
New class VerificationLevel
New function: RandomLinearForm (...)
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| File names: use "SparsePolyOps" (...) |
| :--- |
| New function: myPrimaryDecomposition_0dim |
| BigRat(0) unexpectedly compiles! (...) |
| CpuTime is costly! |
| "mod" for BigInt |
| factor: multivariate, wrong RemainingFactor (...) |
| Release: CoCoALib-0.99580 (together (...) |
| GCD bug with high degree arg |
| factor over algebraic extensions |
| SyzOfGens: bug with zero generators |
| CoCoALib - CoCoALib-0.99650 November (...) |
| Bareiss algorithm |
| Matrix determinant over ZZ |
| Replace auto_ptr in preparation (...) |
| txt2tags: double quotes wrong in (...) |
| GCD very slow |
| Rename iroot? |
| Primary Decompositon (zero-dim) (...) |
| gcd crashes (Floating point exception) |
| New function: HasPositiveGrading |
| HilbertSeries should check grading |
| NewPolyRing default indet names |
| IsPrime(0) |
| MinPolyQuot: guaranteed and ideal (...) |
| principal ideal has a Gbasis |
| SEGV: CoCoALib with Normaliz in (...) |
| New function: radical for monomial (...) |
| RingID: different values in test-output (...) |
| C++14: use nullptr |
| ThreadsafeCounter is now obsolete? |
| Release 0.99650 |
| Printing for (prime) finite fields |
| Never use "using namespace .." (...) |
| New fn: FixedDivisor (formerly (...) |


| CoprimeFactorBasis: mishandles (...) |
| :--- |
| New function primorial |
| Factorization mod $p$ |
| SmoothFactor: allow limit = 1? |
| RealRoots: gives odd number of (...) |
| txt2tags: LaTeX/PDF section numbers (...) |
| New syntax for creating homomorphisms (...) |
| New syntax for NewQuotientRing |
| New function: vector of RingElem (...) |
| Rename SparsePolyOps-Monomialldeal (...) |
| Problem with linking the library |
| New function: ctor of PPVector (...) |
| CoCoALib - CoCoALib-0.99700 |
| Makefile problem in ROOT and/or (...) |
| Squarefree GCD-free basis |
| Return type \& name for "indets" (...) |
| Squarefree(?) GCD-free basis |
| Rows and Columns of a matrix |
| Constructor for vectors? CoCoAVector |
| Indets actually in a poly (or vector (...) |
| QuotientRing: is it correct to (...) |
| configure: search for libgmp too (...) |
| CoCoALib configuration: BOOST dependency |
| ElimMat, ElimHomogMat: complain (...) |
| New function or explain: first (...) |
| Output to bad stream (operator<< (...) |
| configure: auxiliary scripts should (...) |
| Catching interrupts in example (...) |
| IslnRadical: sometimes a bit slow |
| Split NumTheory.C into several (...) |
| should Beginlter(RingElem) be in (...) |
| ReadExpr is too slow on long lists (...) |
| Fix file permissions after using (...) |
| Remove unnecessary files before (...) |


| Gaussian row reduction |
| :--- |
| test-GFan1 fails |
| Problem rebuilding dependencies (...) |
| Release CoCoALib-0.99700 |
| configure script help |
| GBasis verbose mode: some output (...) |
| Should configure remove the file (...) |
| CpuTimeLimit: limit "intervals" (...) |
| Fails to recognize zero-dim ideal |
| Make IsZeroDim more robust |
| myZeroPtr and myOnePtr |
| gfan: installation problem: configure (...) |
| IsPrimary sometimes wrong |
| configure script: MODE option obsolete? |
| IdealOfProjectivePoints and MinGens |
| Main Makefile: does not rebuild (...) |
| New function: LawrenceMat |
| GBasisByHomog for DegLex |
| CoCoALib - CoCoALib-0.99710 |
| New fn ConstantTerm? |
| myTestlsPrimary \& Co. : fix design |
| Bivariate factor bug: sometimes (...) |
| Release CoCoALib-0.99710 |
| CoCoALib - CoCoALib-0.99800 |
| Adjoint of a non-invertible matrix |
| object files collected in one directory |
| Porting "LinKer" |
| Replace bool3 by tribool |
| Keep CoCoALib web page up to date! (...) |
| C++14: Machinelnt |
| Instructions for compiling libnormaliz |
| valuation slow for large inputs |
| MemPool: review min and max loaf (...) |
| ar gives warnings on fedora 23 |

Gaussian row reduction
test-GFan1 fails

Release CoCoALib-0.99700
configure script help
GBasis verbose mode: some output (...)
Should configure remove the file (...)
CpuTimeLimit: limit "intervals" (...)
Mal
makeraPtrand myO
gfan: installation problem: configure (...)
IsPrimary sometimes wrong
gure script: MODE option obsolete?

Mail Pakeil
akefile: does not rebuild (

GBasisyHom for Deglex
CoALib - CoCoALib-0.99710
myTestlsPrimary \& Co. : fix design
Bivariate factor bug: sometimes (...)
Release CoCoALib-0.99710
CoALib - CoCoALib-0.99800
Adjoint of a non-invertible matrix
Potil in collected in one directory

Keep CoCoALib web page up to date! (...)
C++14: MachineInt


MemPool: review min and max loaf (...)
ar gives warnings on fedora 23

[^1]| INPUT questions |
| :--- |
| RingElem from string (ReadExpr) |
| Require decimal mode for ostream? |
| Software licence |
| CpuTimeLimit: more frequent clock (...) |
| BigRat: ctor from machine int |
| IsInRadical: gives "weird" error |
| FloatStr sometimes produces NUL (...) |
| New fn prim for polys |
| CRASH/ABORT: GMP overflow |
| IdealOfPoints: allow matrix of (...) |
| CRASH: LinKerZZ |
| Compilation of Normaliz |
| Normaliz 3.8.10 |
| RingHom: implement phi(X) as apply(phi, (...) |
| Compilation ambiguity |
| binomial: domain of defn? |
| CoCoALib - CoCoALib-0.99850 |
| submat takes only vector<long> |
| C++11 compatibility questions |
| Mod fn for computing remainder |
| MatrixView/function for viewing (...) |
| W.Bruns's wish list |
| Improve doc about ordering/grading (...) |
| Iter for subsets/tuples |
| Make RingBase::myCharacteristic (...) |
| Which ubuntu / debian packages (...) |
| Automatic mapping of RingElem: (...) |
| Makefile; limit dependencies on (...) |
| PPMonoidSparse: impl of sparse (...) |


[^0]:    Rename MatrixArith to MatrixOperations PPMonoidOv is not threadsafe
    factorization: public data fields, (...)
    Use -fopenmp flag when compiling (...)
    NewPolyRing_DMPI has no constructor (...) make check in examples/ directory (...) IsIntegralDomain, lamIntegralDomain3
    Renaming: SqfreeFactor to SqFreeFactor
    SyzOfGens (CoCoALib): fix shifts
    Rename file TmpFactor to factor
    MaxSquarableInteger gives wrong (...)
    Fn to test if an integer is a power (...)
    Release: CoCoALib-0.99533
    Convert BigInt/BigRat to string
    IO: move Globallnput etc to CoCoA (...)
    Compilation problem in TmpMorsePaths.C
    Progress reporter
    CoCoALib/io.H
    CoCoALib - CoCoALib-0.99534 Seoul14
    polynomial coefficient extraction (...)
    cleanup doc for matrix, MatrixViews, (...)
    MatByRows, MatByCols
    Repeated rows/cols in submat
    Usefulness of ring casting fns (...)
    FractionField -- only of TrueGCDDomain?
    CoCoALib normaliz interface
    Automatic mapping of RingElems
    Documentation for tmp.H (utils (...)
    Compilation problem with "degree.H" (...)
    Module ordering and grading (and (...)
    ordering and grading (weights) (...)
    Remove AsPolyRing etc?
    Documentation for adding functions (...)
    Release: CoCoALib-0.99534

[^1]:    Function MakeTermOrd should be (...) Janet basis code: TmpJB files give (...) SimplestBigRatBetween: why is it (...) SmoothFactor: slow when a factor (...) Split MatrixOps
    Reconsider design for accessing (...)

    ## FreeModule: get canonical basis

    Tidy up code for matrix determinant
    adj: for matrices $7 \times 7$ and bigger
    Radical 0-dim: varied timings
    GBasisTimeout: not working as expected
    RingElems: syntax with [ and ] (...)
    SHA checksum for released code
    New fn: interreduction
    Radical 0-dim NYI? missing case (...)
    Flatten for a matrix
    Make SmoothFactor interruptible
    Redesign interrupt mechanism?
    Name of TensorMat; change to KroneckerProd?
    Change CoCoA_ERROR into CoCoA_THROW_ERROR
    SmoothFactor: use FactorMultiplicity
    Change syntax apply(phi,M) into (...)
    isystem not working as expected
    Release CoCoALib 0.99800
    IsPowerOf2 for rationals
    ker bug (quotientinghom for R/ideal())
    New function: MinusOneToPower
    Normaliz 3.8.9
    factorization: allow zero as exponent?
    IsDivisible in a field?
    Indets in coeffring are ringelems (...)
    RandomLinearForm
    Input fns: action when when istream (...)
    MacOS compilation with clang

