

# CoCoALib

	2018-5				2018-6				2018-7				2018-8				2018-9				2018-10			
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
CoCoA																								
CoCoALib																								
MinPolyQuot not documented																								
New function IsInSymbols																								
CoCoALib releases on redmine																								
CoCoALib - CoCoALib-0.99850																								
Release CoCoALib 0.99850																								
CoCoALib - CoCoALib-0.99880																								
Matrix equation solving; linear (...)																								
Improve threadsafety																								
Matrix equation solving: LinKer																								
Printing polynomials - spaces between (...)																								
Play with GIT																								
Error: ERR::NotNonZero instead (...)																								
Elim(vector<long>) as PPOrderingCtor																								
Syzygy for modules: non-homogeneous (...)																								
Error codes: use same code for (...)																								
LongRange: in which file should (...)																								
Impl small non-prime finite fields (...)																								
DistrMPolyClean does not use MemPool (...)																								
MatrixOrderingMod32749Impl: test (...)																								
Update normaliz interface?																								
Insert calls to CheckForInterrupt																								
Better errors: give supplementary (...)																								
SLUG: elimination																								
Test whether a symbol is in a ring																								
DivMask: extend interface?																								
Implement "elim" in CoCoALib																								

Cleanup MinPoly code  
implicit, ImplicitHypersurface: (...)  
Redesign ideals  
LinSolve for matrices over FFp  
strict enum types: C++11 extension  
New function: cardinality of finite (...)  
FlagManager for bool/bool3 flags  
MachineInt or long for args which (...)  
Separate configure scripts for (...)  
MachineInt: change semantics?  
IsRadical for ideal?  
New function: multiplicity and (...)  
Improve saturate  
GFan: require version newer than (...)  
Slug: Polynomial ring constructor (...)  
Revive code for SelfSaturating (...)  
SLUG: factorization of  $x^{9999}$   
Separate install script for CoCoALib?  
Canonical homomorphism for (some) (...)  
interval arithmetic  
Clean up SparsePolyOps-MonomialIdeals  
Naming convention mistakes  
IsZeroDet: new fn  
New function: SubmoduleOfGBasis  
32-bit or 64-bit preprocessor macro?  
Frobby version number  
factor SEGV -- too large characteristic  
C++14: Use type auto where appropriate  
New function: MinPoly for pseudo-zero-dimensional (...)  
Ideals with trivial GBasis  
Tidy CoCoALib test directory  
Determinant & Inverse of matrix (...)  
Factor of multivariate sometimes (...)  
exgcd over integers (ZZ)

PrimaryDecomposition: a interesting/pathological (...)

C++14: use the new for loop syntax (...)

ideal ctor where given gens are (...)

TmpLDP uses srand and time

RingID counter increased inside (...)

Type ideal for ZZ[x[1..n]]

GlobalManager: create SignalWatcher (...)

Oddly slow GBasis computation (slow (...)

Make class RingElemVector?

RadicalZeroDim with extra parameter (...)

Remove flag IhaveGBasisValue?

DenseMatrix: use template impl (...)

HNF: Hermite Normal Form

Start using C++14 "move" capability

What is the difference between (...)

mul(MAT,MAT,MAT)

Simple syntax for making a quotient (...)

Doc for normaliz fns

Documentation for SparsePolyOps?

Better test for univariate-ness (...)

Unexpectedly slow example with (...)

gfan does not "deinitialize"

Default ctor for rings

Doc for module term orderings

matrix.H and MatrixView.H

ker\_H needs care

Use noexcept

DynamicBitset missing arg checks

cmp for machine integers

Detect updated versions of external (...)

Clean time.C

Documentation for PrimaryDecomposition

Unused variables, params, data (...)

NR for polys with coeffs in PID

interreduce: make monic if over (...)  
rref slower than expected (maybe) (...)  
Improve CertifyNotPower  
txt2tags: problem with filenames (...)  
geobucket: documentation  
Compilation on Windows: problems (...)  
GBasis over ZZ: port to CoCoALib  
Generalize prim  
Review File subtree hierarchy  
Build also dynamic/shared library (...)  
Review examples  
release-source script: use shell (...)  
Unsigned long for indexes (& sizes?)  
Islrred in ZZ[x,y]  
RingBase::mySwap needed?  
Shell scripts: Shebang line, etc  
Threadsafety, multithreading: optional (...)  
Symlink directory for external (...)  
ProgressReporter: prepare for new (...)  
Development releases?  
ProductBigInt (also ProductBigRat???)  
FactorINT has got worse  
DivAlg in CoCoALib  
Cruft in ExtLibs-Normaliz.C  
ApplySPRCodomain: relax power/exponent (...)  
FactorINT: funny order  
Clean TmpGOperations, and remove (...)  
Homogenization of an ideal with (...)  
Suggestion about Graded polynomial (...)  
MinGens gives non minimal gens (...)  
MinGens could be faster  
Implement Truncated GBases for (...)  
Implement GBMill (aka Groebner (...)  
July 2023

**IdealOfPoints: allow duplicate (...)**  
**deg(f) is slow if f is long**  
**gcd(f,f) is slow**  
**Verbosity messages: avoid printing (...)**  
**VerificationLevel: just 3? Low, (...)**  
**Homogenizer**  
**Make CoCoALib test file for radical**  
**Iterator design: compatible with (...)**  
**CpuTimeOut: arg of type ErrorContext?**  
**Use ErrorContext instead of string (...)**  
**myFinalizeGBasis ("Final clean (...)**  
**Computing in sub polyring**  
**Conversion from SmallPrime to UNSIGNED (...)**  
**BuildInfo**  
**Error codes: "Not..." for "blah (...)**  
**New constructor for PolyRing with (...)**  
**Make ex-syz.C**  
**Check include guards**  
**Documentation: indexXX.html should (...)**  
**CoCoALib - CoCoALib-0.99900**  
**Redmine Administration**  
**Design new errors using inheritance**  
**Which names to use? Intersection/saturation (...)**  
**New function: IdealWithIncrementalGBasis(l, (...)**  
**Documentation: translation table**  
**New class: exterior algebra**  
**ideal: does const ourGetPtr really (...)**  
**Create PolyOps-RingElem?**  
**Move to C++14 (skipping C++11)**  
**subresultant**  
**HilbertDriven Buchberger Algorithm**  
**Filling matrix row/col from a vector**  
**GFan: port CoCoA\_5 functions into (...)**  
**Adjoin indets to a poly ring**

Get indexed indets from a polyring  
Idea for for loops  
Extended rationals: PlusInfinity (...)  
submat of a submat  
SLUG: Printing PPs with many indets  
Convenient RingHom pseudo-ctors  
Factorization in  $K(a,b)[x,y]$   
ElimMat is slow  
Sparse matrix (SparseMat)  
Coding guidelines  
Signal handler not portable?  
Intersection of Ideals: has GBasis?  
Implement `monic0(f)` for the case (...)  
Add LM to `cocoalib` ?  
MachineInt: chase through ULL (...)  
Documentation: a good model to (...)  
swap for new classes  
Random and threadsafe?  
Suggestion: Add "JumpTo" function (...)  
Use C++ attributes  
Finalize design for ideals in `CoCoALib`  
Code & doc structure: one-big-file (...)  
Add flag `IhaveHomogGensValue` (...)  
Add function `IsHomog3(I)`?  
Add new function for `IsInRadical` (...)  
Add a function `CleanupGens` making (...)  
Tidying ideal generators (for non-polynomial (...)  
Improve trivial operations with (...)  
Use long long (at least sometimes)?  
Release `CoCoALib 0.99900`  
Some tests have become slower  
Ensure tests do not need too much (...)  
`CoCoALib - CoCoALib-1.0`  
Sort out `RingElem`, `RefRingElem`, (...)

List of all functions in CoCoALib  
printing polynomials  
keywords in documentation  
Cleanup header for ring classes (...)  
Error Codes  
automatic creation of all function (...)  
Introduce PartialHom  
Ideals of polynomials  
LT over QQ: surprisingly slow  
IdealOfPoints with generic coeffs  
New datastructures directory  
Convert DUPFF code to C++  
Better GCD  
Design problem in ideals  
Convenience ring ctors and homs  
Buchberger-Moeller (parent task)  
    Buchberger-Moeller: fast modular (...)  
    Buchberger-Moeller: impl via (...)  
Buchberger-Moeller: input conversions  
Makefile dependencies  
RingOf rather than owner? (and (...))  
Iterated CanonicalHom  
GCD normalization (e.g. monic)  
Convert old "task table" into redmine  
IsStdGraded: add for PPOrdering, (...)  
PPWithMask needs checking  
Example for change of coordinates (...)  
HilbertBasis from Normaliz: full-lattice (...)  
Generator for random ring elements  
Documentation for QBGenerator needs (...)  
No test for QBGenerator  
Approx QIR  
Transcribe C4 code for GCD in QQ[x]  
Multivariate lifting

Move the various `<matrix>::mySetEntry (...)`  
Forward declarations  
Eliminate class `RefPPMonoidElem?`  
Store unique copy of `FF(p)` in `GlobalManager`  
Global setting: to use `IsProbPrime (...)`  
`PrimeField` -- new fn?  
Modules design: brainstorming  
Compilation on M\$Windows: `Visual (...)`  
`FreeModule`: unique copy?  
Add doc for `ApproxPts2`  
submodule constructor different (...)  
C++ nasty surprises  
Why is `DMPI` slower than `DMPClean`?  
Module homs  
Missing documentation and tests (...)  
`CoCoAServer`: what future, what (...)  
`Resolution/morse`: integrate `Mario (...)`  
add resolution data type  
implement algorithm(s) for resolutions  
`PPMonoidElemAlias`: redesign `PPMonoidElem (...)`  
add `myHilbertSeries` member field (...)  
add `myJBMill` member field to ideal  
`NewFreeModule` of dimension 0  
Minimal syzygies (optimized implementation)  
Allow user to give a name to a (...)  
Error names and error messages (...)  
Semantics of `IsPrintedWithMinus`  
Improve `UPoly` eval at `BigRat` for (...)  
`MemPool`: order free blocks?  
Polynomial multiplication (product (...))  
Port `RealRoots` to C++  
Eigenvectors  
Which sets of generators in an (...)  
`LinearSimplify`: port to `CoCoALib`



Unique copies of rings -- smart (...)  
Clang: automatic bug finding  
Documentation: write doc for RingDenseUPolyClean  
Quick/correct flag for bool3 fns  
Fn to "flatten" multiple polynomial (...)  
Make squarefreefactor work in multiple (...)  
FloatStr uses too much memory  
Functions to clean up a factorization  
elim using RingTwinFloat triggers (...)  
add myResolution member field (...)  
Reconsider overloaded virtual mem (...)  
Subrings  
Temporary file for experimentation  
FloatApprox for TwinFloat values?  
Documentation for ReductionCog  
Allow use of RingElem instead of (...)  
Split SparsePolyRing.H into two (...)  
Investigate using cmake for configuration  
New function for printing with (...)  
Implement gin (generic initial (...)  
Problem with template instantiation (...)  
configure: check all libraries (...)  
Redesign CRTMill  
Wikipedia  
Gaussian integer and rationals (...)  
Complex twin-floats  
Shadow CoCoA namespace to help (...)  
What is test-Dynamic1.C  
Buchberger-Moeller: add option (...)  
Unique copies of free modules?  
Optimized algorithms for implicitization (...)  
Laurent polynomials  
Integrate Janet/Pommaret basis (...)  
factor: multivariate + finite characteristic

Matrix determinant over multivariate (...)  
Credits to CoCoALib contributors  
Accumulator (like a geobucket)  
MemPool: make it easier to get (...)  
PPMonoid: add fn to check for overflow (...)  
Use DivMask inside QBGenerator  
myAddMul in poly rings  
PolyAlgebraHom (PolyRingHom) evaluate (...)  
Fault tolerant rational reconstruction: (...)  
Remove cruft from test files  
Add more operations between modules (...)  
Example database: Slow ideal equality (...)  
Noncommutative algebra "of solvable (...)  
Betti numbers, betti diagram  
Extend homomorphism to polynomial (...)  
Addition of sparse (multivariate) (...)  
View PP exponent vector (and order (...)  
Problem with GBasis in tower of (...)  
Investigate using Boost.build instead (...)  
configure: have option to say to (...)  
GlobalManager: initialization compatible (...)  
ExternalLib-CDD: (needed by GFan)  
CoCoALib cone  
PPMonoid with 1 extra "exponent"?  
CRTMill::myAddInfo accept modulus (...)  
Makefile: problem not seeing when (...)  
GroebnerFan/ExternalLib-GFan: improve (...)  
threadsafety: Scott Meyers's advice (...)  
finite fields: global register (...)  
Remove refcounts from RingElem?  
No doc for DistrMPolyInIFpPP  
Clean code for DistrMPolyClean  
SmallFpImpl: make it faster  
vector of "indets" in each PPMonoid?

PPOrdering: use it to compute WDeg?  
Alg Extn by non-zero dim ideal  
FastCmp for degree -- useful?  
PPMonoid pseudo-ctor without explicit (...)  
GenRepr in CoCoALib?  
F5 with 3 args?  
Sparse matrices  
MachineInt: function for checking (...)  
Generalize grading matrix  
UIBC: need include file in RingWeyl.C  
Make Mario's new code threadsafe  
factor is very slow on some simple (...)  
Differential algebra  
SparsePolyIter: make more compatible (...)  
GINV: alex basis  
NewPolyRing: tidy up the many different (...)  
PPMonoidSparse: comparisons are (...)  
IsIrred: correct design?  
SmallFpImpl: different repr for (...)  
bool3: add some logical operations?  
factor: too slow on largish multivariate (...)  
Impl faster multiplication for (...)  
DistrMPolyInIPP::myPushFront and (...)  
IsIrred3: fast 3-way irred test (...)  
myIsEqual, myCmp: direct comparisons (...)  
SmallFpDouble: which impl of InvMod (...)  
External libraries: keep copy of (...)  
Read input from SymbolicData database  
New function: quorem for univariate (...)  
Hilbert Driven GBasis  
Design GBMill  
Fn to read symbol range (SymbolRange)  
Documentation: check layout of (...)  
Printing TwinFloat as (rational) (...)

**LinDepMill: Mill for linear dependencies**  
**Slow NF example**  
**Weights in ElimMat?**  
**ex-PolyIterator**  
**QIR/RealRootRefine: improve behaviour (...)**  
**GCD: add special case if args are (...)**  
**Poly ring homomorphism to change (...)**  
**C++11: Mario's Hilbert scheme code**  
**GlobalManager: name of object in (...)**  
**RowMat, ColMat with arg an empty (...)**  
**New "LF" function which is based (...)**  
**JanetBasis gives error indet index (...)**  
**GroebnerFan: slow examples**  
**Printing ring for ideals (or just (...)**  
**GroebnerFan: ERROR: Matrix must (...)**  
**Slug: MakeTermOrd (rk calls in (...)**  
**invalid pointer in "free"**  
**WEB SITE: HTML is not clean!**  
**Ctors for exceptions/errors**  
**Pseudo-zero-dim ideals**  
**Remove READLINE from CoCoALib**  
**Better printing of negative coeffs**  
**SqFreeFactor: should it work over (...)**  
**Organize better the documentation (...)**  
**mySquare and myPowerSmallExp**  
**New fn: transform ideal with ring (...)**  
**Printing for RingElem**  
**Clean up revised RatReconstructByContFrac (...)**  
**Upper bound for value of poly in (...)**  
**Matrix rank is slow (over QQ)**  
**Non-standard DegRevLex (NonStdDegRevLex, (...)**  
**New function: Threadsafe RandomLinearForm (...)**  
**exgcd; solve Bezout equation**  
**Make a poly ring QQ[x,y,z] also (...)**

<p><b>Ideal equality</b></p> <p><b>Ideal Ops: sort-cuts for trivial (...)</b></p> <p><b>Port old "clever" code for matrix (...)</b></p> <p><b>Improve RealRoots: compute sqfr (...)</b></p> <p><b>Improve RootBound</b></p> <p><b>All PPs of given wdeg</b></p> <p><b>gcd: low degree but big coeffs (...)</b></p> <p><b>RandomUnimodularMat is slow with (...)</b></p> <p><b>French students' example with GFan</b></p> <p><b>Create two separate radical fns (...)</b></p> <p><b>DynamicBitset::lamAll1s</b></p> <p><b>Unified Gaussian reduction impl</b></p> <p><b>Benchmarks?</b></p> <p><b>C++17: notes about updating</b></p> <p><b>slimgb: Brickenstein, singular</b></p> <p><b>Clean out OLD CODE?</b></p> <p><b>CoCoALib - removed/duplicates</b></p> <p><b>CoCoALib: ideas for student projects</b></p>	
--	--