

## CoCoALib - CoCoALib-1.0 (Oct 24)

#	Priority	Tracker	Subject	Assignee	Updated	% Done	Estimated time
145	Urgent	Feature	Buchberger-Moeller: fast modular impl	John Abbott	10 Jul 2014 14:17	0	20.0
1010	Urgent	Feature	C++11: Mario's Hilbert scheme code		20 Feb 2017 13:19	0	
147	Urgent	Feature	Buchberger-Moeller: impl via modular reduction	John Abbott	10 Jul 2014 14:18	20	25.0
143	Urgent	Feature	Buchberger-Moeller (parent task)	John Abbott	10 Jul 2014 14:16	38	
6	High	Bug	Sort out RingElem, RefRingElem, ConstRefRingElem mess	John Abbott	01 Aug 2014 08:59	0	20.0
263	High	Design	Move the various <matrix>::mySetEntry procedures into MatrixBase		01 Aug 2014 16:29	0	
387	High	Feature	implement algorithm(s) for resolutions	Anna Maria Bigatti	30 Jul 2014 17:04	0	
399	High	Feature	add myHilbertSeries member field to ideal and (sub)module	Anna Maria Bigatti	30 Jul 2014 17:04	0	
409	High	Feature	Minimal syzygies (optimized implementation)	Anna Maria Bigatti	31 Jul 2014 12:36	0	10.0
440	High	Feature	Port RealRoots to C++	John Abbott	19 Oct 2016 10:26	0	
685	High	Feature	Use DivMask inside QBGenerator		02 Feb 2016 14:16	0	
817	High	Feature	GenRepr in CoCoALib?		17 Nov 2016 14:12	0	
386	High	Feature	add resolution data type	Anna Maria Bigatti	11 Jun 2015 14:58	10	
513	High	Design	Quick/correct flag for bool3 fns		10 Jul 2014 16:30	10	20.0
112	Normal	Support	automatic creation of all function signatures		07 Apr 2014 14:34	0	
120	Normal	Slug	LT over QQ: surprisingly slow		10 Jul 2014 16:26	0	4.0
123	Normal	Feature	IdealOfPoints with generic coeffs		09 Jul 2014 18:15	0	
126	Normal	Feature	New datastructures directory		13 May 2015 09:56	0	
129	Normal	Slug	Better GCD		09 Jul 2014 18:08	0	15.0
130	Normal	Bug	Design problem in ideals		13 May 2015 09:56	0	
134	Normal	Feature	Convenience ring ctors and homs		11 Jul 2014 12:06	0	
146	Normal	Feature	Buchberger-Moeller: input conversions		10 Jul 2014 14:17	0	7.5
149	Normal	Bug	Makefile dependencies		01 Aug 2014 08:59	0	
151	Normal	Feature	Iterated CanonicalHom		13 May 2015 09:58	0	20.0
161	Normal	Support	Convert old "task table" into redmine		07 Apr 2014 14:35	0	8.0
174	Normal	Feature	IsStdGraded: add for PPOrdering, PPMonoid, (Sparse)PolyRing..		01 Aug 2014 08:59	0	
196	Normal	Bug	PPWithMask needs checking	Anna Maria Bigatti	04 Apr 2014 17:50	0	

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205	Normal	Support	Example for change of coordinates with coeffs in a matrix	Anna Maria Bigatti	14 Jul 2014 14:39	0	1.0
227	Normal	Feature	HilbertBasis from Normaliz: full-lattice or not?		31 Jul 2014 12:39	0	
229	Normal	Feature	Generator for random ring elements		01 Aug 2014 08:59	0	
231	Normal	Support	Documentation for QBGenerator needs to be improved.		09 Jul 2014 18:06	0	
232	Normal	Bug	No test for QBGenerator		15 Apr 2015 20:15	0	5.0
246	Normal	Feature	Approx QIR		04 Apr 2014 17:16	0	
257	Normal	Feature	Transcribe C4 code for GCD in QQ[x]		01 Aug 2014 08:59	0	
258	Normal	Feature	Multivariate lifting		01 Aug 2014 08:59	0	
272	Normal	Design	Forward declarations		07 Apr 2014 18:14	0	
277	Normal	Bug	Eliminate class RefPPMonoidElem?		01 Aug 2014 08:59	0	8.0
281	Normal	Feature	Store unique copy of FF(p) in GlobalManager		04 Apr 2014 17:10	0	
282	Normal	Feature	Global setting: to use IsProbPrime in place of IsPrime		01 Aug 2014 08:59	0	
289	Normal	Feature	PrimeField -- new fn?		01 Aug 2014 08:59	0	
315	Normal	Feature	Add doc for ApproxPts2		10 Jul 2014 16:23	0	10.0
329	Normal	Slug	Why is DMPI slower than DMPClean?		13 May 2015 09:54	0	
337	Normal	Feature	Module homs		31 Jul 2014 12:40	0	
360	Normal	Design	CoCoAServer: what future, what issues?		28 Apr 2017 11:19	0	
396	Normal	Design	PPMonoidElemAlias: redesign PPMonoidElem the same way as RingElem?	John Abbott	13 May 2015 09:57	0	
400	Normal	Feature	add myJBMill member field to ideal		15 Sep 2014 12:04	0	
401	Normal	Bug	NewFreeModule of dimension 0		31 Jul 2014 14:13	0	
420	Normal	Feature	Allow user to give a name to a ring		13 May 2015 09:55	0	
436	Normal	Feature	Improve UPoly eval at BigRat for binary rational		01 Aug 2014 08:59	0	
442	Normal	Feature	Eigenvectors		09 Jul 2014 18:05	0	
455	Normal	Design	Which sets of generators in an ideal?		14 Jul 2014 15:17	0	16.0
497	Normal	Support	Clang: automatic bug finding		04 Apr 2014 17:20	0	
505	Normal	Support	Documentation: write doc for RingDenseUPolyClean	Anna Maria Bigatti	21 Sep 2016 17:15	0	1.5
515	Normal	Feature	Fn to "flatten" multiple polynomial extns		10 Jul 2014 14:22	0	
516	Normal	Feature	Make squarefreefactor work in multiple polynomial extns		10 Jul 2014 14:21	0	
547	Normal	Bug	elim using RingTwinFloat triggers error "SERIOUS"		15 Jun 2016 14:35	0	20.0
550	Normal	Design	add myResolution member field to ideal and (sub)module		13 May 2015 09:57	0	
551	Normal	Design	Reconsider overloaded virtual mem fns		09 Jul 2014 18:00	0	15.0

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562	Normal	Feature	Subrings		29 Sep 2020 13:19	0	40.0
564	Normal	Feature	Temporary file for experimentation		16 Jul 2014 14:38	0	2.0
569	Normal	Support	Documentation for ReductionCog		11 Jun 2014 16:04	0	
570	Normal	Feature	Allow use of RingElem instead of ring in some functions (e.g. PPM, CoeffRing)		16 Jul 2014 14:43	0	
572	Normal	Design	Split SparsePolyRing.H into two files? Problem with circular includes.		17 May 2018 16:36	0	
583	Normal	Feature	New function for printing with extra information		07 Jul 2014 11:48	0	
589	Normal	Feature	Implement gin (generic initial ideal) in cocoalib	Anna Maria Bigatti	15 Jul 2014 18:17	0	3.0
617	Normal	Feature	configure: check all libraries for compatibility		09 Sep 2014 12:21	0	
624	Normal	Support	Wikipedia	Anna Maria Bigatti	06 Nov 2017 13:40	0	
627	Normal	Feature	Gaussian integer and rationals ZZi, QQi		23 Sep 2014 16:30	0	
628	Normal	Feature	Complex twin-floats		22 Sep 2014 18:16	0	
640	Normal	Bug	What is test-Dynamic1.C		29 Oct 2014 11:30	0	
644	Normal	Feature	Buchberger-Moeller: add option to stop as soon as 1 poly has been found	John Abbott	06 Nov 2017 13:58	0	
647	Normal	Design	Unique copies of free modules?		10 Nov 2014 16:55	0	
661	Normal	Feature	Laurent polynomials		23 Jan 2015 13:50	0	
667	Normal	Feature	factor: multivariate + finite characteristic		04 Mar 2015 20:08	0	
690	Normal	Feature	Fault tolerant rational reconstruction: implement simultaneous version		23 Apr 2015 19:12	0	
695	Normal	Support	Remove cruft from test files		08 May 2015 11:37	0	
725	Normal	Slug	Example database: Slow ideal equality test		10 Jun 2015 14:24	0	
92	Normal	Feature	Error Codes		19 Apr 2017 08:31	0	40.0
316	Normal	Design	submodule constructor different from ideal	Anna Maria Bigatti	10 Jul 2014 16:21	0	
353	Normal	Support	Missing documentation and tests for myRecvTwinFloat	John Abbott	14 Jul 2014 14:40	0	
740	Normal	Feature	Addition of sparse (multivariate) polynomials		17 Jun 2016 14:35	0	
746	Normal	Bug	Problem with GBasis in tower of alg extns		21 Mar 2016 14:29	0	
752	Normal	Design	Investigate using Boost.build instead of make	John Abbott	28 Apr 2017 11:23	0	
785	Normal	Design	finite fields: global register of fields already created?		15 Oct 2015 17:27	0	
787	Normal	Design	Remove refcounts from RingElem?		19 Oct 2015 17:08	0	
788	Normal	Support	No doc for DistrMPolyInIFpPP		22 Oct 2015 13:49	0	
791	Normal	Support	Clean code for DistrMPolyClean	Anna Maria Bigatti	02 Nov 2015 22:13	0	
808	Normal	Bug	Alg Extn by non-zero dim ideal		18 Nov 2015 23:29	0	

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809	Normal	Design	FastCmp for degree -- useful?	Anna Maria Bigatti	27 Nov 2015 16:06	0	
812	Normal	Feature	PPMonoid pseudo-ctor without explicit ordering		24 Nov 2015 18:16	0	
826	Normal	Feature	Sparse matrices		02 Dec 2015 18:24	0	
835	Normal	Feature	Make Mario's new code threadsafe		09 Dec 2015 16:48	0	
837	Normal	Slug	factor is very slow on some simple input polynomials		06 Jan 2016 14:40	0	
842	Normal	Slug	PPMonoidSparse: comparisons are VERY SLOW		15 Feb 2016 13:57	0	
869	Normal	Feature	SmallFpImpl: different repr for computation and for storage?		22 Apr 2016 15:14	0	
882	Normal	Slug	Impl faster multiplication for DUP (dense univariate polys)		09 May 2016 22:10	0	
884	Normal	Slug	DistrMPolyInIPP::myPushFront and DistrMPolyInIPP::myPushBack inefficient if arg is a PP		24 May 2016 15:25	0	
904	Normal	Feature	SmallFpDouble: which impl of InvMod to use?		04 Jul 2016 13:45	0	
906	Normal	Design	External libraries: keep copy of compatible versions?		13 Jul 2016 11:19	0	
913	Normal	Feature	Read input from SymbolicData database	Anna Maria Bigatti	02 Aug 2016 10:55	0	
914	Normal	Feature	New function: quorem for univariate polynomials?		22 Aug 2016 16:45	0	
919	Normal	Feature	Hilbert Driven GBasis		22 May 2017 14:11	0	
921	Normal	Design	Design GBMill		22 May 2017 14:11	0	
923	Normal	Feature	Fn to read symbol range (SymbolRange)		16 Sep 2016 15:04	0	
972	Normal	Support	ex-PolyIterator		17 Nov 2016 13:21	0	
987	Normal	Feature	GCD: add special case if args are monomials		28 Nov 2016 22:04	0	
992	Normal	Feature	Poly ring homomorphism to change ordering		13 Dec 2016 18:04	0	
1026	Normal	Bug	JanetBasis gives error indet index out of range		08 Mar 2017 15:26	0	
1098	Normal	Design	Ctors for exceptions/errors		06 Sep 2017 15:27	0	
1134	Normal	Support	Organize better the documentation for CoCoALib		09 Apr 2019 10:50	0	
1147	Normal	Design	mySquare and myPowerSmallExp		30 Apr 2019 17:18	0	
1150	Normal	Feature	New fn: transform ideal with ring hom		22 Jun 2020 10:34	0	
1156	Normal	Design	Printing for RingElem		08 Jan 2020 23:02	0	
1160	Normal	Support	Clean up revised RatReconstructByContFrac code	John Abbott	26 Feb 2019 16:33	0	
1173	Normal	Feature	Upper bound for value of poly in an interval		04 Apr 2018 11:55	0	
1187	Normal	Slug	Matrix rank is slow (over QQ)		26 Jun 2018 11:29	0	
1198	Normal	Feature	Non-standard DegRevLex (NonStdDegRevLex, WDegRevLex)		23 Sep 2019 12:44	0	
1208	Normal	Bug	New function: Threadsafe RandomLinearForm (CoCoALib)		01 Oct 2019 11:28	0	10.0
1227	Normal	Feature	exgcd; solve Bezout equation		29 Aug 2019 14:55	0	

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1266	Normal	Design	Make a poly ring $QQ[x,y,z]$ also contain a $ZZ[x,y,z]$		28 Mar 2019 16:42	0	
1269	Normal	Feature	Ideal Ops: sort-cuts for trivial args?		04 Apr 2019 15:07	0	
1278	Normal	Feature	Port old "clever" code for matrix determinant over $ZZ$ to CoCoALib		03 May 2019 11:42	0	
1323	Normal	Feature	Improve RealRoots: compute sqfr decomp		30 Sep 2019 16:14	0	
1339	Normal	Feature	All PPs of given wdeg		16 Oct 2019 14:04	0	
1359	Normal	Slug	gcd: low degree but big coeffs can be slow		30 Oct 2019 22:23	0	
1378	Normal	Design	Create two separate radical fns (for 0-dim ideals)		03 Jul 2023 17:49	0	
1491	Normal	Design	Unified Gaussian reduction impl		08 Mar 2023 19:55	0	
1584	Normal	Support	Benchmarks?		08 Mar 2023 19:41	0	
1632	Normal	Design	C++17: notes about updating		12 Nov 2021 18:11	0	
1706	Normal	Feature	slimgb: Brickenstein, singular		30 Oct 2022 20:30	0	
1799	Normal	Design	Clean out OLD CODE?		24 Mar 2024 10:52	0	
778	Normal	Design	CRTMill::myAddInfo accept modulus 1 or not?		21 Mar 2016 15:16	0	
74	Normal	Bug	printing polynomials		14 Jul 2014 11:07	10	5.0
87	Normal	Support	Cleanup header for ring classes (so that they are e-diff-able)	Anna Maria Bigatti	10 Jul 2014 16:26	10	5.0
688	Normal	Slug	PolyAlgebraHom (PolyRingHom) evaluate multivariate polynomials		22 Apr 2015 14:38	10	
703	Normal	Design	Add more operations between modules (CoCoALib)	Anna Maria Bigatti	27 Oct 2017 11:53	10	20.0
113	Normal	Feature	Introduce PartialHom	John Abbott	09 Jul 2014 18:04	10	15.0
114	Normal	Bug	Ideals of polynomials		10 Jul 2014 14:26	10	4.0
150	Normal	Feature	RingOf rather than owner? (and than AmbientRing, ...)		30 Jul 2014 17:59	10	8.0
305	Normal	Design	FreeModule: unique copy?		10 Dec 2023 20:43	10	
326	Normal	Bug	C++ nasty surprises		07 Apr 2014 18:13	10	
427	Normal	Design	Error names and error messages (current design)		11 May 2017 10:57	10	20.0
432	Normal	Design	Semantics of IsPrintedWithMinus		14 Jul 2014 18:13	10	
437	Normal	Feature	MemPool: order free blocks?		13 Apr 2015 23:31	10	15.0
438	Normal	Support	Polynomial multiplication (product of RingElem)		10 Jul 2014 16:28	10	
482	Normal	Feature	Unique copies of rings -- smart ctor		20 Oct 2015 14:33	10	
575	Normal	Feature	Investigate using cmake for configuration	John Abbott	13 Mar 2024 21:19	10	
651	Normal	Feature	Optimized algorithms for implicitization (slicing algorithm, elim, subalgebra..)		12 Feb 2015 10:33	10	100.0
665	Normal	Feature	Integrate Janet/Pommaret basis code	John Abbott	12 Jun 2018 18:36	10	
675	Normal	Slug	Matrix determinant over multivariate poly ring		22 May 2015 13:45	10	

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676	Normal	Support	Credits to CoCoALib contributors	Anna Maria Bigatti	28 Apr 2017 11:06	10	
728	Normal	Feature	Noncommutative algebra "of solvable type"		09 Jul 2015 08:39	10	
1013	Normal	Support	GlobalManager: name of object in examples (and tests)		25 Feb 2017 11:11	10	
1059	Normal	Design	Printing ring for ideals (or just for ideals 0 and 1)		05 May 2017 16:58	10	3.0
1070	Normal	Slug	Slug: MakeTermOrd (rk calls in RemoveRedundantRows)	Anna Maria Bigatti	17 May 2017 13:47	10	
729	Normal	Feature	Betti numbers, betti diagram		14 Jun 2018 15:54	10	
738	Normal	Feature	Extend homomorphism to polynomial ring		25 Jun 2015 17:23	10	3.0
742	Normal	Slug	View PP exponent vector (and order vector?) as an array of long?		01 Sep 2015 12:08	10	
758	Normal	Feature	configure: have option to say to look for external libs		03 Sep 2015 11:41	10	
763	Normal	Design	GlobalManager: initialization compatible with initialization of external libs		21 Mar 2016 16:55	10	
765	Normal	Feature	ExternalLib-CDD: (needed by GFan)	Anna Maria Bigatti	11 Sep 2019 13:47	10	
769	Normal	Design	CoCoALib cone		27 Jan 2020 15:32	10	
784	Normal	Bug	threadsafety: Scott Meyers's advice about cached values		18 Jan 2016 18:12	10	
803	Normal	Feature	PPOrdering: use it to compute WDeg?		06 Nov 2017 14:00	10	
818	Normal	Bug	F5 with 3 args?	John Abbott	24 Nov 2015 10:11	10	
838	Normal	Feature	Differential algebra		24 Oct 2016 15:32	10	
840	Normal	Feature	GINV: alex basis		31 Mar 2016 13:05	10	
841	Normal	Design	NewPolyRing: tidy up the many different versions		01 Sep 2017 11:30	10	
873	Normal	Feature	bool3: add some logical operations?		21 Jun 2016 14:37	10	
885	Normal	Feature	Islrred3: fast 3-way irred test (returning bool3)		30 Apr 2019 17:19	10	
896	Normal	Feature	myIsEqual, myCmp: direct comparisons between RingElem and MachineInt, BigInt and BigRat?		25 Jun 2018 15:31	10	
937	Normal	Feature	LinDepMill: Mill for linear dependencies	Anna Maria Bigatti	18 Apr 2024 16:38	10	
968	Normal	Slug	Slow NF example		10 Nov 2016 21:33	10	16.0
970	Normal	Design	Weights in ElimMat?		11 Nov 2016 15:49	10	
974	Normal	Feature	QIR/RealRootRefine: improve behaviour if input interval has "nasty" endpoints		01 Mar 2021 21:25	10	
1069	Normal	Bug	GroebnerFan: ERROR: Matrix must be invertible		17 Dec 2018 15:16	10	
1089	Normal	Bug	invalid pointer in "free"	John Abbott	20 Jul 2017 13:06	10	
1117	Normal	Feature	Better printing of negative coeffs		23 Sep 2019 11:52	10	
1130	Normal	Bug	SqFreeFactor: should it work over ZZ?		05 Apr 2019 15:39	10	
1267	Normal	Feature	Ideal equality		09 Apr 2019 17:48	10	10.0

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1324	Normal	Slug	Improve RootBound		30 Oct 2019 21:44	10	
686	Normal	Design	myAddMul in poly rings	Anna Maria Bigatti	20 Apr 2015 13:22	20	
154	Normal	Bug	GCD normalization (e.g. monic)		24 Nov 2016 13:56	20	
565	Normal	Feature	FloatApprox for TwinFloat values?	John Abbott	19 Jul 2016 22:44	20	20.0
620	Normal	Design	Redesign CRTMill	John Abbott	21 Mar 2016 14:30	20	40.0
678	Normal	Feature	Accumulator (like a geobucket)		17 Nov 2016 19:03	20	
1022	Normal	Feature	New "LF" function which is based on StdDeg		06 Mar 2017 19:37	20	3.0
780	Normal	Feature	GroebnerFan/ExternalLib-GFan: improve package	Anna Maria Bigatti	21 Apr 2017 11:06	20	20.0
797	Normal	Feature	SmallFpImpl: make it faster	John Abbott	24 Apr 2024 23:04	20	
828	Normal	Feature	MachineInt: function for checking that value is greater than some lower limit (and below MAXLONG)	John Abbott	15 Apr 2024 10:08	20	
846	Normal	Design	Islrred: correct design?	John Abbott	26 Feb 2019 16:32	20	
874	Normal	Slug	factor: too slow on largish multivariate poly	John Abbott	26 Feb 2019 16:29	20	
297	Normal	Design	Modules design: brainstorming		31 Jul 2014 14:55	30	
1103	Normal	Feature	Pseudo-zero-dim ideals	Anna Maria Bigatti	05 Nov 2021 16:09	30	
127	Normal	Feature	Convert DUPFF code to C++	John Abbott	28 Sep 2022 15:04	50	25.0
302	Normal	Support	Compilation on M\$Windows: Visual Studio		22 Mar 2024 23:13	60	
383	Normal	Feature	Resolution/morse: integrate Mario Albert's code into CoCoALib	John Abbott	31 Jul 2014 14:57	60	
76	Low	Support	keywords in documentation		04 Apr 2014 17:51	0	10.0
459	Low	Feature	LinearSimplify: port to CoCoALib		20 May 2014 09:47	0	
537	Low	Slug	FloatStr uses too much memory		16 Apr 2014 12:01	0	
539	Low	Feature	Functions to clean up a factorization		22 Jan 2024 20:28	0	7.0
639	Low	Feature	Shadow CoCoA namespace to help guarantee portability (without ambiguity)		28 Oct 2014 15:34	0	
681	Low	Feature	MemPool: make it easier to get just stats		13 Apr 2015 23:25	0	
682	Low	Feature	PPMonoid: add fn to check for overflow in products		14 Apr 2015 11:23	0	3.0
775	Low	Feature	PPMonoid with 1 extra "exponent"?		15 Sep 2015 20:18	0	
779	Low	Bug	Makefile: problem not seeing when files in TmpFactorDir need to be rebuilt		17 Sep 2015 22:10	0	
833	Low	Bug	UIBC: need include file in RingWeyl.C		08 Dec 2015 15:06	0	
926	Low	Support	Documentation: check layout of history at end of generated HTML files (from the txt files)		21 Sep 2016 13:29	0	
930	Low	Bug	Printing TwinFloat as (rational) coeff without brackets		24 Sep 2016 21:43	0	
1096	Low	Support	WEB SITE: HTML is not clean!	Anna Maria Bigatti	31 Aug 2017 10:05	0	

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1419	Low	Feature	DynamicBitset::lamAll1s		03 Feb 2021 18:18	0	
59	Low	Support	List of all functions in CoCoALib		08 Mar 2023 19:44	10	
839	Low	Feature	SparsePolyIter: make more compatible with STL		07 Mar 2024 20:01	10	
986	Low	Bug	GFan: require version newer than 0.6		22 Apr 2024 20:06	10	
1014	Low	Bug	RowMat, ColMat with arg an empty list/vector		24 Feb 2017 17:54	10	
1049	Low	Slug	GroebnerFan: slow examples		11 Mar 2024 11:12	10	
1369	Low	Slug	RandomUnimodularMat is slow with many iters		09 Jan 2020 12:19	10	
1371	Low	Bug	French students' example with GFan		27 Nov 2019 15:53	10	
832	Low	Design	Generalize grading matrix		14 Mar 2024 11:29	20	6.0
799	Low	Slug	vector of "indets" in each PPMonoid?	John Abbott	11 Nov 2015 13:47	20	
591	Low	Bug	Problem with template instantiation and order of include directives		09 Feb 2024 10:18	50	5.0