

## CoCoALib - Issues

| #    | Project  | Parent task | Priority | Subject   | Assignee           | Updated           | Category        | % Done |
|------|----------|-------------|----------|---|--------------------|-------------------|-----------------|--------|
| 1814 | CoCoALib |             | Normal   | Ensure tests do not need too much RAM                                     |                    | 23 Apr 2024 22:14 | Safety          | 30     |
| 1813 | CoCoALib |             | Normal   | Some tests have become slower   |                    | 07 Apr 2024 21:53 | Safety          | 10     |
| 1812 | CoCoALib |             | Normal   | Documentation: indexXX.html should be recompiled if version has changed   |                    | 29 Mar 2024 10:37 | Documentation   | 0      |
| 1811 | CoCoALib |             | Normal   | Check include guards  | John Abbott        | 22 Apr 2024 20:15 | Tidying         | 90     |
| 1810 | CoCoALib |             | Normal   | Release CoCoALib 0.99900  |                    | 29 Mar 2024 09:00 | Various         | 0      |
| 1809 | CoCoALib |             | Normal   | Make ex-syz.C   | Anna Maria Bigatti | 28 Mar 2024 08:45 | Documentation   | 10     |
| 1808 | CoCoALib |             | Normal   | New constructor for PolyRing with elimination ordering                    | Anna Maria Bigatti | 28 Mar 2024 07:35 | New Function    | 10     |
| 1807 | CoCoALib |             | Normal   | Error codes: "Not..." for "blah must be ..." -- change prefix             |                    | 26 Mar 2024 14:22 | Renaming        | 0      |
| 1804 | CoCoALib |             | Normal   | Use long long (at least sometimes)?                                       | John Abbott        | 26 Apr 2024 21:09 | Portability     | 80     |
| 1803 | CoCoALib |             | Normal   | Improve trivial operations with ideal whose GBasis is [1]                 | Anna Maria Bigatti | 25 Mar 2024 19:06 |                 | 0      |
| 1802 | CoCoALib |             | Normal   | Tidying ideal generators (for non-polynomial ideals)                      |                    | 25 Mar 2024 19:05 | Improving       | 0      |
| 1801 | CoCoALib |             | Normal   | BuildInfo   |                    | 13 Apr 2024 22:18 | Tidying         | 10     |
| 1800 | CoCoALib |             | Normal   | Conversion from SmallPrime to UNSIGNED long?                              |                    | 15 Apr 2024 10:09 | Tidying         | 10     |
| 1799 | CoCoALib |             | Normal   | Clean out OLD CODE?   |                    | 24 Mar 2024 10:52 | Tidying         | 0      |
| 1798 | CoCoALib |             | Normal   | Computing in sub polyring   |                    | 22 Mar 2024 09:30 | Improving       | 0      |
| 1797 | CoCoALib |             | Normal   | Add a function CleanupGens making some easy cleaning on the generators?   |                    | 25 Mar 2024 19:16 | New Function    | 0      |
| 1796 | CoCoALib |             | Normal   | myFinalizeGBasis ("Final clean up") should be more flexible               | Anna Maria Bigatti | 22 Mar 2024 16:19 | Improving       | 30     |
| 1793 | CoCoALib |             | Normal   | Use ErrorContext instead of string FnName                                 |                    | 26 Mar 2024 11:50 | Improving       | 60     |
| 1792 | CoCoALib |             | Normal   | CpuTimeOut: arg of type ErrorContext?                                     |                    | 18 Mar 2024 20:50 | Tidying         | 0      |
| 1787 | CoCoALib |             | Normal   | Iterator design: compatible with C++STL? Advancing beyond end?            | John Abbott        | 23 Apr 2024 22:26 | Tidying         | 30     |
| 1786 | CoCoALib |             | Normal   | Add new function for IsInRadical for monomial ideals? (RadicalMembership) | Anna Maria Bigatti | 01 Mar 2024 18:37 | Improving       | 10     |
| 1785 | CoCoALib |             | Normal   | Add function IsHomog3(l)?   |                    | 01 Mar 2024 14:53 | New Function    | 0      |
| 1784 | CoCoALib |             | Normal   | Add flag lhaveHomogGensValue for ideals in SparsePolyRing?                |                    | 01 Mar 2024 14:36 | Data Structures | 0      |
| 1783 | CoCoALib |             | Normal   | Code & doc structure: one-big-file or many-small-files?                   |                    | 24 Feb 2024 18:34 | Tidying         | 10     |
| 1782 | CoCoALib |             | Normal   | Make CoCoALib test file for radical                                       | Anna Maria Bigatti | 01 Mar 2024 09:44 | Tidying         | 0      |
| 1778 | CoCoALib |             | Normal   | Homogenizer   |                    | 25 Apr 2024 21:54 | New Function    | 10     |

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| 1777 | CoCoALib |             | Normal   | VerificationLevel: just 3? Low, high, guaranteed?             |                    | 16 Feb 2024 10:00 | Various         | 0      |
| 1775 | CoCoALib |             | Normal   | CoCoALib releases on redmine                                  | Anna Maria Bigatti | 12 Jan 2024 13:29 | Documentation   | 70     |
| 1767 | CoCoALib |             | Normal   | Finalize design for ideals in CoCoALib                        |                    | 08 Mar 2024 17:26 | Data Structures | 10     |
| 1764 | CoCoALib |             | Low      | Verbosity messages: avoid printing BIG values                 |                    | 25 Apr 2024 21:44 | Improving       | 10     |
| 1757 | CoCoALib |             | Normal   | gcd(f,f) is slow  |                    | 16 Feb 2024 09:57 | Improving       | 0      |
| 1756 | CoCoALib |             | Normal   | deg(f) is slow if f is long                                   | John Abbott        | 21 Mar 2024 20:40 | Improving       | 50     |
| 1750 | CoCoALib |             | Normal   | IdealOfPoints: allow duplicate points?                        | John Abbott        | 08 Mar 2024 18:23 | Improving       | 20     |
| 1748 | CoCoALib |             | Normal   | July 2023   | John Abbott        | 08 Mar 2024 08:29 | Various         | 0      |
| 1744 | CoCoALib |             | Normal   | Implement GBMill (aka Groebner Framework)                     | Anna Maria Bigatti | 25 May 2023 14:30 | Data Structures | 10     |
| 1743 | CoCoALib |             | Normal   | Implement Truncated GBases for homogeneous input              | Anna Maria Bigatti | 19 May 2023 15:42 | New Function    | 0      |
| 1742 | CoCoALib |             | Normal   | MinGens could be faster                                       | Anna Maria Bigatti | 18 May 2023 13:44 | Improving       | 10     |
| 1740 | CoCoALib |             | High     | MinGens gives non minimal gens *if some deg=0*                | Anna Maria Bigatti | 22 Mar 2024 18:04 | Maths Bugs      | 30     |
| 1738 | CoCoALib |             | Normal   | Suggestion about Graded polynomial rings                      |                    | 05 May 2023 08:47 | Data Structures | 10     |
| 1737 | CoCoALib |             | Normal   | Homogenization of an ideal with ZZ^1-grading                  | Anna Maria Bigatti | 01 Feb 2024 19:59 | Improving       | 20     |
| 1736 | CoCoALib |             | Normal   | Clean TmpGOperations, and remove Tmp prefix                   |                    | 28 Apr 2023 16:01 | Tidying         | 0      |
| 1733 | CoCoALib |             | Low      | FactorINT: funny order  | John Abbott        | 22 Apr 2024 19:51 | Improving       | 60     |
| 1730 | CoCoALib |             | Normal   | ApplySPRCodomain: relax power/exponent check                  |                    | 27 Nov 2023 20:30 | Improving       | 0      |
| 1727 | CoCoALib |             | Normal   | Cruft in ExtLibs-Normaliz.C                                   |                    | 13 Mar 2023 19:01 | Tidying         | 0      |
| 1720 | CoCoALib |             | Normal   | DivAlg in CoCoALib  | Anna Maria Bigatti | 25 Mar 2024 17:55 | Tidying         | 20     |
| 1715 | CoCoALib |             | Low      | ProductBigInt (also ProductBigRat???)                         |                    | 23 Jan 2024 22:14 | New Function    | 0      |
| 1711 | CoCoALib |             | Normal   | Development releases?   | Anna Maria Bigatti | 09 Mar 2023 20:56 | Various         | 90     |
| 1706 | CoCoALib |             | Normal   | slimgb: Brickenstein, singular                                |                    | 30 Oct 2022 20:30 | Improving       | 0      |
| 1705 | CoCoALib |             | Normal   | ProgressReporter: prepare for new loop?                       | John Abbott        | 25 Apr 2024 21:40 | Improving       | 80     |
| 1704 | CoCoALib |             | Normal   | Symlink directory for external files needed by CoCoA-5        | Anna Maria Bigatti | 18 Mar 2024 09:29 | Tidying         | 0      |
| 1703 | CoCoALib |             | Normal   | Threadsafty, multithreading: optional fn arg (or separate fn) | John Abbott        | 07 Mar 2024 20:04 | Safety          | 80     |
| 1702 | CoCoALib |             | Low      | Use C++ attributes  |                    | 22 Apr 2024 21:26 | Tidying         | 10     |
| 1699 | CoCoALib |             | Normal   | Shell scripts: Shebang line, etc                              |                    | 16 Feb 2024 10:01 | Portability     | 10     |

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| 1692 | CoCoALib |             | Normal    | Suggestion: Add "JumpTo" function to prime iterators           |                    | 15 Feb 2024 22:39 | Improving     | 10     |
| 1691 | CoCoALib |             | Normal    | Random and threadsafe?   |                    | 15 Feb 2024 22:38 | Safety        | 0      |
| 1687 | CoCoALib |             | Normal    | Release CoCoALib 0.99850                                       | Anna Maria Bigatti | 29 Mar 2024 10:42 | Various       | 50     |
| 1685 | CoCoALib |             | Normal    | RingBase::mySwap needed?                                       |                    | 07 Mar 2024 20:49 | Improving     | 10     |
| 1683 | CoCoALib |             | Immediate | Islrred in ZZ[x,y]   | John Abbott        | 16 Feb 2024 09:39 | Improving     | 0      |
| 1682 | CoCoALib |             | Normal    | swap for new classes   |                    | 16 Feb 2024 09:35 | Improving     | 10     |
| 1678 | CoCoALib |             | Normal    | Unsigned long for indexes (& sizes?)                           |                    | 07 Mar 2024 20:25 | Safety        | 10     |
| 1677 | CoCoALib |             | Normal    | release-source script: use shell globbing?                     |                    | 16 Feb 2024 10:01 | Tidying       | 10     |
| 1673 | CoCoALib |             | Normal    | Review examples  |                    | 08 Mar 2023 19:45 | Documentation | 0      |
| 1672 | CoCoALib |             | Normal    | Documentation: a good model to follow?                         |                    | 16 Feb 2024 09:33 | Documentation | 0      |
| 1670 | CoCoALib |             | Normal    | Build also dynamic/shared library for CoCoALib?                |                    | 07 Mar 2024 21:33 | Portability   | 0      |
| 1669 | CoCoALib |             | Normal    | Review File subtree hierarchy                                  |                    | 08 Mar 2023 19:56 | Tidying       | 0      |
| 1668 | CoCoALib |             | Normal    | Generalize prim  |                    | 31 Jan 2024 22:03 | Improving     | 0      |
| 1667 | CoCoALib |             | Urgent    | GBasis over ZZ: port to CoCoALib                               |                    | 26 Mar 2024 17:19 | Improving     | 10     |
| 1666 | CoCoALib |             | Normal    | MachineInt: chase through ULL changes                          |                    | 16 Apr 2024 22:40 | Tidying       | 10     |
| 1665 | CoCoALib |             | Normal    | Compilation on Windows: problems for normaliz                  | Anna Maria Bigatti | 18 Mar 2024 09:27 | Documentation | 0      |
| 1664 | CoCoALib |             | Normal    | geobucket: documentation                                       |                    | 08 Mar 2023 19:44 | Documentation | 0      |
| 1662 | CoCoALib |             | Normal    | txt2tags: problem with filenames containing "_" or "-"         | Anna Maria Bigatti | 09 Apr 2024 14:21 | Documentation | 80     |
| 1657 | CoCoALib |             | Normal    | Improve CertifyNotPower  |                    | 31 Jan 2024 22:03 | Improving     | 0      |
| 1654 | CoCoALib |             | Normal    | New function IsInSymbols                                       |                    | 12 May 2023 08:03 |               | 0      |
| 1652 | CoCoALib |             | Low       | Add LM to cocoalib ?   |                    | 15 Feb 2024 22:41 | New Function  | 10     |
| 1645 | CoCoALib |             | Normal    | Implement monic0(f) for the case monic(0)?                     |                    | 16 Feb 2024 09:38 | Improving     | 10     |
| 1643 | CoCoALib |             | Normal    | rref slower than expected (maybe) [[reduced row echelon form]] |                    | 01 Mar 2024 09:54 | Improving     | 0      |
| 1642 | CoCoALib |             | Normal    | interreduce: make monic if over finite field?                  | John Abbott        | 16 Feb 2024 20:44 | Improving     | 20     |
| 1637 | CoCoALib |             | Low       | Intersection of Ideals: has GBasis?                            |                    | 16 Feb 2024 17:25 | Improving     | 0      |
| 1635 | CoCoALib |             | Normal    | NR for polys with coeffs in PID                                |                    | 16 Feb 2024 09:39 | New Function  | 10     |
| 1632 | CoCoALib |             | Normal    | C++17: notes about updating                                    |                    | 12 Nov 2021 18:11 | Portability   | 0      |
| 1630 | CoCoALib |             | Normal    | Signal handler not portable?                                   |                    | 15 Feb 2024 22:42 | Portability   | 0      |
| 1628 | CoCoALib |             | Normal    | Unused variables, params, data members                         |                    | 11 Mar 2023 12:29 | Tidying       | 10     |
| 1620 | CoCoALib |             | Normal    | MinPolyQuot not documented                                     |                    | 15 Oct 2021 14:24 |               | 0      |
| 1611 | CoCoALib |             | Normal    | Documentation for PrimaryDecomposition                         |                    | 16 Feb 2024 09:42 | Documentation | 0      |

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|------|----------|-------------|----------|--|--------------------|-------------------|---------------|--------|
| 1609 | CoCoALib |             | Low      | Clean time.C   |                    | 08 Mar 2023 19:54 | Tidying       | 0      |
| 1607 | CoCoALib |             | Normal   | Coding guidelines  |                    | 16 Feb 2024 10:02 | Documentation | 0      |
| 1602 | CoCoALib |             | Low      | Sparse matrix (SparseMat)  |                    | 15 Feb 2024 22:42 | New Function  | 0      |
| 1600 | CoCoALib |             | Normal   | Detect updated versions of external libs                                 |                    | 16 Feb 2024 10:02 | Safety        | 10     |
| 1588 | CoCoALib |             | Low      | ElimMat is slow  |                    | 22 Mar 2024 09:29 | Improving     | 0      |
| 1584 | CoCoALib |             | Normal   | Benchmarks?  |                    | 08 Mar 2023 19:41 | Documentation | 0      |
| 1582 | CoCoALib |             | Normal   | Factorization in $K(a,b)[x,y]$   |                    | 07 Mar 2024 20:23 | Improving     | 0      |
| 1576 | CoCoALib |             | Normal   | cmp for machine integers   | John Abbott        | 21 Jan 2024 20:23 | Improving     | 20     |
| 1575 | CoCoALib |             | Normal   | DynamicBitset missing arg checks   | Anna Maria Bigatti | 16 Feb 2024 09:46 | Safety        | 0      |
| 1572 | CoCoALib |             | Normal   | Use noexcept   | John Abbott        | 23 Apr 2024 21:57 | Improving     | 70     |
| 1571 | CoCoALib |             | Normal   | ker_H needs care   | Anna Maria Bigatti | 16 Feb 2024 17:49 | Maths Bugs    | 10     |
| 1562 | CoCoALib |             | Normal   | matrix.H and MatrixView.H  |                    | 08 Mar 2023 19:56 | Tidying       | 0      |
| 1561 | CoCoALib |             | High     | Doc for module term orderings  |                    | 08 Mar 2024 17:38 | Documentation | 0      |
| 1559 | CoCoALib |             | Normal   | Default ctor for rings   |                    | 13 Mar 2024 20:42 | Improving     | 10     |
| 1542 | CoCoALib |             | Normal   | gfan does not "deinitialize"   |                    | 08 Mar 2023 19:53 | Various       | 30     |
| 1532 | CoCoALib |             | Normal   | Convenient RingHom pseudo-ctors  |                    | 07 Mar 2024 21:34 | New Function  | 10     |
| 1521 | CoCoALib |             | Normal   | Unexpectedly slow example with larger types for SmallExponent_t          |                    | 08 Mar 2023 19:54 | Various       | 0      |
| 1518 | CoCoALib |             | Normal   | SLUG: Printing PPs with many indets                                      |                    | 15 Feb 2024 22:45 | Improving     | 20     |
| 1513 | CoCoALib |             | Normal   | Better test for univariate-ness (and better conversion)                  |                    | 16 Mar 2024 21:38 | Improving     | 0      |
| 1510 | CoCoALib |             | Normal   | Documentation for SparsePolyOps?   |                    | 18 Mar 2024 09:45 | Documentation | 30     |
| 1497 | CoCoALib |             | Normal   | Doc for normaliz fns   |                    | 08 Mar 2023 19:40 | Documentation | 0      |
| 1492 | CoCoALib |             | Low      | submat of a submat   |                    | 16 Feb 2024 17:28 | Improving     | 0      |
| 1491 | CoCoALib |             | Normal   | Unified Gaussian reduction impl  |                    | 08 Mar 2023 19:55 | Tidying       | 0      |
| 1485 | CoCoALib |             | Normal   | Simple syntax for making a quotient ring?                                |                    | 08 Mar 2023 19:51 | Improving     | 0      |
| 1482 | CoCoALib |             | Normal   | Extended rationals: PlusInfinity and MinusInfinity                       |                    | 16 Feb 2024 18:02 | New Function  | 10     |
| 1472 | CoCoALib |             | Low      | Idea for for loops   |                    | 16 Feb 2024 09:55 | New Function  | 10     |
| 1470 | CoCoALib |             | Normal   | Get indexed indets from a polyring                                       |                    | 07 Mar 2024 20:36 | New Function  | 0      |
| 1468 | CoCoALib |             | Normal   | Adjoin indets to a poly ring   |                    | 15 Feb 2024 22:45 | New Function  | 10     |
| 1465 | CoCoALib |             | Normal   | mul(MAT,MAT,MAT)   |                    | 16 Feb 2024 10:04 | Tidying       | 10     |
| 1464 | CoCoALib |             | Normal   | What is the difference between InterruptReceived and InterruptedBySignal |                    | 01 Mar 2024 09:54 | Tidying       | 0      |
| 1446 | CoCoALib |             | Normal   | Start using C++14 "move" capability                                      |                    | 08 Mar 2024 18:00 | Improving     | 10     |

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| 1444 | CoCoALib |             | Normal   | HNF: Hermite Normal Form  |                    | 16 Feb 2024 09:53 | New Function    | 0      |
| 1441 | CoCoALib |             | Normal   | GFan: port CoCoA_5 functions into CoCoALib                                  | Anna Maria Bigatti | 16 Feb 2024 17:54 | New Function    | 0      |
| 1437 | CoCoALib |             | Normal   | Filling matrix row/col from a vector  |                    | 15 Feb 2024 22:46 | New Function    | 0      |
| 1433 | CoCoALib |             | Normal   | HilbertDriven Buchberger Algorithm  | Anna Maria Bigatti | 16 Feb 2024 18:02 | New Function    | 0      |
| 1428 | CoCoALib |             | Normal   | DenseMatrix: use template impl for ctors from vec-vec?                      |                    | 07 Mar 2024 20:49 | Tidying         | 0      |
| 1422 | CoCoALib |             | Normal   | Remove flag lhaveGBasisValue?   | Anna Maria Bigatti | 16 Feb 2024 17:56 | Data Structures | 10     |
| 1419 | CoCoALib |             | Low      | DynamicBitset::lamAll1s   |                    | 03 Feb 2021 18:18 | Improving       | 0      |
| 1417 | CoCoALib |             | Normal   | RadicalZeroDim with extra parameter for GBasis timeout                      | Anna Maria Bigatti | 16 Mar 2024 21:42 | Improving       | 20     |
| 1414 | CoCoALib |             | High     | Make class RingElemVector?  |                    | 25 Apr 2024 21:53 | Data Structures | 20     |
| 1394 | CoCoALib |             | Low      | Oddly slow GBasis computation (slow final cleanup)                          | Anna Maria Bigatti | 16 Apr 2024 22:46 | Improving       | 70     |
| 1388 | CoCoALib |             | Normal   | GlobalManager: create SignalWatcher internally?                             |                    | 01 Mar 2024 09:49 | Safety          | 0      |
| 1381 | CoCoALib |             | Normal   | Type ideal for ZZ[x[1..n]]  |                    | 16 Feb 2024 09:47 | Data Structures | 10     |
| 1378 | CoCoALib |             | Normal   | Create two separate radical fns (for 0-dim ideals)                          |                    | 03 Jul 2023 17:49 | Improving       | 0      |
| 1371 | CoCoALib |             | Low      | French students' example with GFan  |                    | 27 Nov 2019 15:53 | Improving       | 10     |
| 1370 | CoCoALib |             | Low      | RingID counter increased inside some functions                              |                    | 31 Jan 2024 22:19 | Improving       | 0      |
| 1369 | CoCoALib |             | Low      | RandomUnimodularMat is slow with many iters                                 |                    | 09 Jan 2020 12:19 | Improving       | 10     |
| 1359 | CoCoALib |             | Normal   | gcd: low degree but big coeffs can be slow                                  |                    | 30 Oct 2019 22:23 | Improving       | 0      |
| 1355 | CoCoALib |             | Normal   | TmpLDP uses srand and time  |                    | 01 Mar 2024 09:50 | Tidying         | 0      |
| 1349 | CoCoALib |             | Normal   | ideal ctor where given gens are a gbasis                                    |                    | 16 Feb 2024 09:52 | Improving       | 10     |
| 1346 | CoCoALib |             | Normal   | C++14: use the new for loop syntax where appropriate (like cocoa's foreach) |                    | 22 Apr 2024 21:08 | Improving       | 80     |
| 1339 | CoCoALib |             | Normal   | All PPs of given wdeg   |                    | 16 Oct 2019 14:04 | New Function    | 0      |
| 1337 | CoCoALib |             | Normal   | PrimaryDecomposition: a interesting/pathological example                    | Anna Maria Bigatti | 08 Mar 2023 21:13 | Improving       | 10     |
| 1324 | CoCoALib |             | Normal   | Improve RootBound   |                    | 30 Oct 2019 21:44 | Improving       | 10     |
| 1323 | CoCoALib |             | Normal   | Improve RealRoots: compute sqfr decomp                                      |                    | 30 Sep 2019 16:14 | Improving       | 0      |
| 1306 | CoCoALib |             | Normal   | exgcd over integers (ZZ)  |                    | 08 Mar 2024 17:57 | New Function    | 20     |
| 1282 | CoCoALib |             | Normal   | subresultant  |                    | 08 Mar 2024 17:54 | New Function    | 20     |
| 1281 | CoCoALib |             | High     | Factor of multivariate sometimes prints ERROR                               |                    | 21 Jan 2024 20:03 | Maths Bugs      | 10     |
| 1280 | CoCoALib |             | High     | Determinant & Inverse of matrix over non integral domain                    | John Abbott        | 21 Jan 2024 19:43 | Improving       | 40     |

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| 1278 | CoCoALib |             | Normal   | Port old "clever" code for matrix determinant over ZZ to CoCoALib |                    | 03 May 2019 11:42 | New Function    | 0      |
| 1269 | CoCoALib |             | Normal   | Ideal Ops: sort-cuts for trivial args?                            |                    | 04 Apr 2019 15:07 | Improving       | 0      |
| 1267 | CoCoALib |             | Normal   | Ideal equality  |                    | 09 Apr 2019 17:48 | Improving       | 10     |
| 1266 | CoCoALib |             | Normal   | Make a poly ring QQ[x,y,z] also contain a ZZ[x,y,z]               |                    | 28 Mar 2019 16:42 | Improving       | 0      |
| 1263 | CoCoALib |             | Normal   | Tidy CoCoALib test directory                                      | John Abbott        | 07 Mar 2023 20:49 | Tidying         | 80     |
| 1255 | CoCoALib |             | Normal   | Ideals with trivial GBasis  |                    | 08 Mar 2023 19:49 | Improving       | 0      |
| 1254 | CoCoALib |             | Normal   | New function: MinPoly for pseudo-zero-dimensional ideals          | Anna Maria Bigatti | 07 Mar 2024 20:25 | New Function    | 0      |
| 1242 | CoCoALib |             | Normal   | C++14: Use type auto where appropriate                            |                    | 22 Apr 2024 21:08 | Tidying         | 40     |
| 1233 | CoCoALib |             | High     | factor SEGV -- too large characteristic                           | John Abbott        | 14 Mar 2023 19:45 | Maths Bugs      | 60     |
| 1227 | CoCoALib |             | Normal   | exgcd; solve Bezout equation                                      |                    | 29 Aug 2019 14:55 | New Function    | 0      |
| 1225 | CoCoALib |             | High     | Move to C++14 (skipping C++11)                                    |                    | 08 Mar 2024 17:46 | Portability     | 30     |
| 1219 | CoCoALib |             | Normal   | Frobby version number   |                    | 08 Mar 2023 19:40 | Documentation   | 10     |
| 1213 | CoCoALib |             | Normal   | Create PolyOps-RingElem?  |                    | 16 Feb 2024 09:48 | Tidying         | 0      |
| 1208 | CoCoALib |             | Normal   | New function: Threadsafe RandomLinearForm (CoCoALib)              |                    | 01 Oct 2019 11:28 | Safety          | 0      |
| 1207 | CoCoALib |             | Normal   | New function: SubmoduleOfGBasis                                   |                    | 18 Mar 2024 09:33 | New Function    | 0      |
| 1198 | CoCoALib |             | Normal   | Non-standard DegRevLex (NonStdDegRevLex, WDegRevLex)              |                    | 23 Sep 2019 12:44 | New Function    | 0      |
| 1197 | CoCoALib |             | Normal   | IsZeroDet: new fn   | John Abbott        | 08 Mar 2024 17:58 | New Function    | 40     |
| 1193 | CoCoALib |             | Low      | Naming convention mistakes  |                    | 08 Mar 2023 20:52 | Renaming        | 0      |
| 1187 | CoCoALib |             | Normal   | Matrix rank is slow (over QQ)                                     |                    | 26 Jun 2018 11:29 | Improving       | 0      |
| 1179 | CoCoALib |             | Normal   | Clean up SparsePolyOps-MonomialIdeals                             | Anna Maria Bigatti | 22 Mar 2024 09:33 | Tidying         | 20     |
| 1176 | CoCoALib |             | Normal   | interval arithmetic   | John Abbott        | 10 Mar 2023 17:46 | New Function    | 50     |
| 1173 | CoCoALib |             | Normal   | Upper bound for value of poly in an interval                      |                    | 04 Apr 2018 11:55 | New Function    | 0      |
| 1168 | CoCoALib |             | Normal   | ideal: does const ourGetPtr really need to be private?            |                    | 08 Mar 2024 17:26 | Data Structures | 40     |
| 1160 | CoCoALib |             | Normal   | Clean up revised RatReconstructByContFrac code                    | John Abbott        | 26 Feb 2019 16:33 | Tidying         | 0      |
| 1156 | CoCoALib |             | Normal   | Printing for RingElem   |                    | 08 Jan 2020 23:02 | Improving       | 0      |
| 1150 | CoCoALib |             | Normal   | New fn: transform ideal with ring hom                             |                    | 22 Jun 2020 10:34 | New Function    | 0      |
| 1147 | CoCoALib |             | Normal   | mySquare and myPowerSmallExp                                      |                    | 30 Apr 2019 17:18 | Tidying         | 0      |
| 1134 | CoCoALib |             | Normal   | Organize better the documentation for CoCoALib                    |                    | 09 Apr 2019 10:50 | Documentation   | 0      |
| 1132 | CoCoALib |             | Normal   | Canonical homomorphism for (some) polynomial rings?               | Anna Maria Bigatti | 08 Mar 2024 18:01 | New Function    | 0      |
| 1130 | CoCoALib |             | Normal   | SqFreeFactor: should it work over ZZ?                             |                    | 05 Apr 2019 15:39 | Improving       | 10     |
| 1125 | CoCoALib |             | Normal   | Separate install script for CoCoALib?                             | John Abbott        | 23 Jan 2024 21:54 | Tidying         | 0      |

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|------|----------|-------------|----------|---|--------------------|-------------------|-----------------|--------|
| 1118 | CoCoALib |             | Low      | SLUG: factorization of $x^{9999}$   |                    | 31 Jan 2024 22:20 | Improving       | 10     |
| 1117 | CoCoALib |             | Normal   | Better printing of negative coeffs  |                    | 23 Sep 2019 11:52 | Improving       | 10     |
| 1115 | CoCoALib |             | Normal   | New class: exterior algebra   | John Abbott        | 31 Jan 2024 21:59 | Data Structures | 20     |
| 1103 | CoCoALib |             | Normal   | Pseudo-zero-dim ideals  | Anna Maria Bigatti | 05 Nov 2021 16:09 | Improving       | 30     |
| 1098 | CoCoALib |             | Normal   | Ctors for exceptions/errors   |                    | 06 Sep 2017 15:27 | Tidying         | 0      |
| 1096 | CoCoALib |             | Low      | WEB SITE: HTML is not clean!  | Anna Maria Bigatti | 31 Aug 2017 10:05 | Documentation   | 0      |
| 1094 | CoCoALib |             | Normal   | Revive code for SelfSaturating GBasis   | Anna Maria Bigatti | 22 Mar 2024 14:38 | New Function    | 50     |
| 1089 | CoCoALib |             | Normal   | invalid pointer in "free"   | John Abbott        | 20 Jul 2017 13:06 | Various         | 10     |
| 1070 | CoCoALib |             | Normal   | Slug: MakeTermOrd (rk calls in RemoveRedundantRows)                           | Anna Maria Bigatti | 17 May 2017 13:47 | Improving       | 10     |
| 1069 | CoCoALib |             | Normal   | GroebnerFan: ERROR: Matrix must be invertible                                 |                    | 17 Dec 2018 15:16 | Improving       | 10     |
| 1066 | CoCoALib |             | Normal   | Documentation: translation table  | Anna Maria Bigatti | 08 Mar 2024 18:16 | Documentation   | 30     |
| 1059 | CoCoALib |             | Normal   | Printing ring for ideals (or just for ideals 0 and 1)                         |                    | 05 May 2017 16:58 | Improving       | 10     |
| 1057 | CoCoALib |             | High     | Slug: Polynomial ring constructor slow with (big) matrix ordering             | Anna Maria Bigatti | 22 Mar 2024 09:31 | Improving       | 50     |
| 1049 | CoCoALib |             | Low      | GroebnerFan: slow examples  |                    | 11 Mar 2024 11:12 | Various         | 10     |
| 1026 | CoCoALib |             | Normal   | JanetBasis gives error indet index out of range                               |                    | 08 Mar 2017 15:26 | Maths Bugs      | 0      |
| 1022 | CoCoALib |             | Normal   | New "LF" function which is based on StdDeg                                    |                    | 06 Mar 2017 19:37 | New Function    | 20     |
| 1014 | CoCoALib |             | Low      | RowMat, ColMat with arg an empty list/vector                                  |                    | 24 Feb 2017 17:54 | Tidying         | 10     |
| 1013 | CoCoALib |             | Normal   | GlobalManager: name of object in examples (and tests)                         |                    | 25 Feb 2017 11:11 | Renaming        | 10     |
| 1010 | CoCoALib |             | Urgent   | C++11: Mario's Hilbert scheme code  |                    | 20 Feb 2017 13:19 | Portability     | 0      |
| 1001 | CoCoALib |             | Normal   | CoCoALib: ideas for student projects  |                    | 18 Feb 2022 16:57 | New Function    | 10     |
| 992  | CoCoALib |             | Normal   | Poly ring homomorphism to change ordering                                     |                    | 13 Dec 2016 18:04 | New Function    | 0      |
| 987  | CoCoALib |             | Normal   | GCD: add special case if args are monomials                                   |                    | 28 Nov 2016 22:04 | Improving       | 0      |
| 986  | CoCoALib |             | Low      | GFan: require version newer than 0.6  |                    | 22 Apr 2024 20:06 | Safety          | 10     |
| 974  | CoCoALib |             | Normal   | QIR/RealRootRefine: improve behaviour if input interval has "nasty" endpoints |                    | 01 Mar 2021 21:25 | Improving       | 10     |
| 972  | CoCoALib |             | Normal   | ex-PolyIterator   |                    | 17 Nov 2016 13:21 | Documentation   | 0      |
| 970  | CoCoALib |             | Normal   | Weights in ElimMat?   |                    | 11 Nov 2016 15:49 | Improving       | 10     |
| 968  | CoCoALib |             | Normal   | Slow NF example   |                    | 10 Nov 2016 21:33 | Improving       | 10     |
| 967  | CoCoALib |             | Normal   | Improve saturate  | Anna Maria Bigatti | 22 Mar 2024 10:18 | Improving       | 70     |

| #   | Project  | Parent task | Priority | Subject  | Assignee           | Updated           | Category        | % Done |
|-----|----------|-------------|----------|--|--------------------|-------------------|-----------------|--------|
| 958 | CoCoALib |             | Normal   | New function: multiplicity and dim   | Anna Maria Bigatti | 08 Mar 2024 18:15 | New Function    | 80     |
| 949 | CoCoALib |             | Normal   | New function: IdealWithIncrementalGBasis(l, f)   | Anna Maria Bigatti | 16 Feb 2024 18:03 | New Function    | 0      |
| 947 | CoCoALib |             | Normal   | IsRadical for ideal?   |                    | 23 Jan 2024 22:13 | New Function    | 10     |
| 942 | CoCoALib |             | Normal   | Which names to use? Intersection/saturation vs intersect/saturate                          |                    | 22 Mar 2024 10:20 | Renaming        | 20     |
| 937 | CoCoALib |             | Normal   | LinDepMill: Mill for linear dependencies   | Anna Maria Bigatti | 18 Apr 2024 16:38 | New Function    | 10     |
| 934 | CoCoALib |             | Normal   | MachineInt: change semantics?  |                    | 22 Apr 2024 21:32 | Safety          | 30     |
| 933 | CoCoALib |             | Normal   | Separate configure scripts for CoCoALib and CoCoA-5  | John Abbott        | 23 Jan 2024 21:52 | Portability     | 10     |
| 930 | CoCoALib |             | Low      | Printing TwinFloat as (rational) coeff without brackets                                    |                    | 24 Sep 2016 21:43 | Improving       | 0      |
| 926 | CoCoALib |             | Low      | Documentation: check layout of history at end of generated HTML files (from the txt files) |                    | 21 Sep 2016 13:29 | Documentation   | 0      |
| 925 | CoCoALib |             | Normal   | MachineInt or long for args which are indices (yet again)                                  |                    | 16 Apr 2024 22:29 | Safety          | 50     |
| 924 | CoCoALib |             | Normal   | FlagManager for bool/bool3 flags   | Anna Maria Bigatti | 16 Feb 2024 17:57 | Data Structures | 50     |
| 923 | CoCoALib |             | Normal   | Fn to read symbol range (SymbolRange)  |                    | 16 Sep 2016 15:04 | New Function    | 0      |
| 921 | CoCoALib |             | Normal   | Design GBMill  |                    | 22 May 2017 14:11 |                 | 0      |
| 919 | CoCoALib |             | Normal   | Hilbert Driven GBasis  |                    | 22 May 2017 14:11 |                 | 0      |
| 914 | CoCoALib |             | Normal   | New function: quorem for univariate polynomials?   |                    | 22 Aug 2016 16:45 | New Function    | 0      |
| 913 | CoCoALib |             | Normal   | Read input from SymbolicData database  | Anna Maria Bigatti | 02 Aug 2016 10:55 | New Function    | 0      |
| 906 | CoCoALib |             | Normal   | External libraries: keep copy of compatible versions?                                      |                    | 13 Jul 2016 11:19 | Portability     | 0      |
| 904 | CoCoALib |             | Normal   | SmallFpDouble: which impl of InvMod to use?  |                    | 04 Jul 2016 13:45 | Improving       | 0      |
| 898 | CoCoALib |             | High     | New function: cardinality of finite field?   | Anna Maria Bigatti | 08 Mar 2024 17:45 | New Function    | 20     |
| 896 | CoCoALib |             | Normal   | mysEqual, myCmp: direct comparisons between RingElem and MachineInt, BigInt and BigRat?    |                    | 25 Jun 2018 15:31 | Improving       | 10     |
| 894 | CoCoALib |             | Normal   | strict enum types: C++11 extension   | John Abbott        | 25 Apr 2024 21:49 | Safety          | 30     |
| 885 | CoCoALib |             | Normal   | IsIrred3: fast 3-way irred test (returning bool3)  |                    | 30 Apr 2019 17:19 | New Function    | 10     |
| 884 | CoCoALib |             | Normal   | DistrMPolyInIPP::myPushFront and DistrMPolyInIPP::myPushBack inefficient if arg is a PP    |                    | 24 May 2016 15:25 | Improving       | 0      |
| 882 | CoCoALib |             | Normal   | Impl faster multiplication for DUP (dense univariate polys)                                |                    | 09 May 2016 22:10 | Improving       | 0      |
| 874 | CoCoALib |             | Normal   | factor: too slow on largish multivariate poly  | John Abbott        | 26 Feb 2019 16:29 | Improving       | 20     |
| 873 | CoCoALib |             | Normal   | bool3: add some logical operations?  |                    | 21 Jun 2016 14:37 | New Function    | 10     |
| 872 | CoCoALib |             | Urgent   | LinSolve for matrices over Ffp   | John Abbott        | 08 Mar 2024 17:36 | Improving       | 30     |



| #   | Project  | Parent task | Priority  | Subject   | Assignee           | Updated           | Category        | % Done |
|-----|----------|-------------|-----------|---|--------------------|-------------------|-----------------|--------|
| 871 | CoCoALib |             | Normal    | Redesign ideals   |                    | 31 Oct 2023 11:24 | Data Structures | 0      |
| 869 | CoCoALib |             | Normal    | SmallFpImpl: different repr for computation and for storage?                                      |                    | 22 Apr 2016 15:14 | Improving       | 0      |
| 866 | CoCoALib |             | Normal    | implicit, ImplicitHypersurface: improve output verification                                       |                    | 22 Mar 2024 09:43 | Tidying         | 20     |
| 849 | CoCoALib |             | Normal    | Cleanup MinPoly code  | Anna Maria Bigatti | 08 Mar 2024 18:15 | Tidying         | 10     |
| 846 | CoCoALib |             | Normal    | IsIrred: correct design?  | John Abbott        | 26 Feb 2019 16:32 | Improving       | 20     |
| 842 | CoCoALib |             | Normal    | PPMonoidSparse: comparisons are VERY SLOW   |                    | 15 Feb 2016 13:57 | Improving       | 0      |
| 841 | CoCoALib |             | Normal    | NewPolyRing: tidy up the many different versions  |                    | 01 Sep 2017 11:30 | Tidying         | 10     |
| 840 | CoCoALib |             | Normal    | GINV: alex basis  |                    | 31 Mar 2016 13:05 | New Function    | 10     |
| 839 | CoCoALib |             | Low       | SparsePolyIter: make more compatible with STL   |                    | 07 Mar 2024 20:01 | Improving       | 10     |
| 838 | CoCoALib |             | Normal    | Differential algebra  |                    | 24 Oct 2016 15:32 | New Function    | 10     |
| 837 | CoCoALib |             | Normal    | factor is very slow on some simple input polynomials  |                    | 06 Jan 2016 14:40 | Improving       | 0      |
| 835 | CoCoALib |             | Normal    | Make Mario's new code threadsafe  |                    | 09 Dec 2015 16:48 | Safety          | 0      |
| 833 | CoCoALib |             | Low       | UIBC: need include file in RingWeyl.C   |                    | 08 Dec 2015 15:06 | Tidying         | 0      |
| 832 | CoCoALib |             | Low       | Generalize grading matrix   |                    | 14 Mar 2024 11:29 | Data Structures | 20     |
| 828 | CoCoALib |             | Normal    | MachineInt: function for checking that value is greater than some lower limit (and below MAXLONG) | John Abbott        | 15 Apr 2024 10:08 | New Function    | 20     |
| 826 | CoCoALib |             | Normal    | Sparse matrices   |                    | 02 Dec 2015 18:24 | Data Structures | 0      |
| 818 | CoCoALib |             | Normal    | F5 with 3 args?   | John Abbott        | 24 Nov 2015 10:11 | Tidying         | 10     |
| 817 | CoCoALib |             | High      | GenRepr in CoCoALib?  |                    | 17 Nov 2016 14:12 | New Function    | 0      |
| 813 | CoCoALib |             | Immediate | Implement "elim" in CoCoALib  | Anna Maria Bigatti | 18 Mar 2024 15:58 | New Function    | 90     |
| 812 | CoCoALib |             | Normal    | PPMonoid pseudo-ctor without explicit ordering  |                    | 24 Nov 2015 18:16 | New Function    | 0      |
| 809 | CoCoALib |             | Normal    | FastCmp for degree -- useful?   | Anna Maria Bigatti | 27 Nov 2015 16:06 | Tidying         | 0      |
| 808 | CoCoALib |             | Normal    | Alg Extn by non-zero dim ideal  |                    | 18 Nov 2015 23:29 | Tidying         | 0      |
| 803 | CoCoALib |             | Normal    | PPOrdering: use it to compute WDeg?   |                    | 06 Nov 2017 14:00 | New Function    | 10     |
| 802 | CoCoALib |             | Urgent    | DivMask: extend interface?  | John Abbott        | 08 Mar 2024 17:36 | New Function    | 50     |
| 801 | CoCoALib |             | Normal    | Test whether a symbol is in a ring  |                    | 07 Mar 2024 21:36 | New Function    | 0      |
| 799 | CoCoALib |             | Low       | vector of "indets" in each PPMonoid?  | John Abbott        | 11 Nov 2015 13:47 | Improving       | 20     |
| 797 | CoCoALib |             | Normal    | SmallFpImpl: make it faster   | John Abbott        | 24 Apr 2024 23:04 | Improving       | 20     |
| 791 | CoCoALib |             | Normal    | Clean code for DistrMPolyClean  | Anna Maria Bigatti | 02 Nov 2015 22:13 | Tidying         | 0      |
| 788 | CoCoALib |             | Normal    | No doc for DistrMPolyInIFpPP  |                    | 22 Oct 2015 13:49 | Documentation   | 0      |
| 787 | CoCoALib |             | Normal    | Remove refcounts from RingElem?   |                    | 19 Oct 2015 17:08 | Safety          | 0      |

| #   | Project  | Parent task | Priority | Subject   | Assignee           | Updated           | Category        | % Done |
|-----|----------|-------------|----------|---|--------------------|-------------------|-----------------|--------|
| 785 | CoCoALib |             | Normal   | finite fields: global register of fields already created?                     |                    | 15 Oct 2015 17:27 | Improving       | 0      |
| 784 | CoCoALib |             | Normal   | threadsafety: Scott Meyers's advice about cached values                       |                    | 18 Jan 2016 18:12 | Safety          | 10     |
| 780 | CoCoALib |             | Normal   | GroebnerFan/ExternalLib-GFan: improve package                                 | Anna Maria Bigatti | 21 Apr 2017 11:06 | Improving       | 20     |
| 779 | CoCoALib |             | Low      | Makefile: problem not seeing when files in TmpFactorDir need to be rebuilt    |                    | 17 Sep 2015 22:10 | Makefile        | 0      |
| 778 | CoCoALib |             | Normal   | CRTMill::myAddInfo accept modulus 1 or not?                                   |                    | 21 Mar 2016 15:16 | Tidying         | 0      |
| 777 | CoCoALib |             | Normal   | SLUG: elimination   | Anna Maria Bigatti | 22 Mar 2024 18:12 | Improving       | 10     |
| 775 | CoCoALib |             | Low      | PPMonoid with 1 extra "exponent"?   |                    | 15 Sep 2015 20:18 | Improving       | 0      |
| 769 | CoCoALib |             | Normal   | CoCoALib cone   |                    | 27 Jan 2020 15:32 | Data Structures | 10     |
| 765 | CoCoALib |             | Normal   | ExternalLib-CDD: (needed by GFan)   | Anna Maria Bigatti | 11 Sep 2019 13:47 | Portability     | 10     |
| 763 | CoCoALib |             | Normal   | GlobalManager: initialization compatible with initialization of external libs |                    | 21 Mar 2016 16:55 | Portability     | 10     |
| 758 | CoCoALib |             | Normal   | configure: have option to say to look for external libs                       |                    | 03 Sep 2015 11:41 | Improving       | 10     |
| 752 | CoCoALib |             | Normal   | Investigate using Boost.build instead of make                                 | John Abbott        | 28 Apr 2017 11:23 | Portability     | 0      |
| 746 | CoCoALib |             | Normal   | Problem with GBasis in tower of alg extns                                     |                    | 21 Mar 2016 14:29 | Various         | 0      |
| 743 | CoCoALib |             | Urgent   | Better errors: give supplementary info about the error                        |                    | 15 Mar 2024 18:33 | Improving       | 10     |
| 742 | CoCoALib |             | Normal   | View PP exponent vector (and order vector?) as an array of long?              |                    | 01 Sep 2015 12:08 | Improving       | 10     |
| 740 | CoCoALib |             | Normal   | Addition of sparse (multivariate) polynomials                                 |                    | 17 Jun 2016 14:35 | Improving       | 0      |
| 738 | CoCoALib |             | Normal   | Extend homomorphism to polynomial ring  |                    | 25 Jun 2015 17:23 | New Function    | 10     |
| 729 | CoCoALib |             | Normal   | Betti numbers, betti diagram  |                    | 14 Jun 2018 15:54 | Data Structures | 10     |
| 728 | CoCoALib |             | Normal   | Noncommutative algebra "of solvable type"                                     |                    | 09 Jul 2015 08:39 | New Function    | 10     |
| 725 | CoCoALib |             | Normal   | Example database: Slow ideal equality test                                    |                    | 10 Jun 2015 14:24 | Various         | 0      |
| 710 | CoCoALib |             | Normal   | Update normaliz interface?  |                    | 16 Feb 2024 18:25 | Improving       | 10     |
| 707 | CoCoALib |             | Normal   | MatrixOrderingMod32749Impl: test and write documentation!                     | Anna Maria Bigatti | 25 Apr 2024 21:46 | Safety          | 50     |
| 703 | CoCoALib |             | Normal   | Add more operations between modules (CoCoALib)                                | Anna Maria Bigatti | 27 Oct 2017 11:53 | New Function    | 10     |
| 695 | CoCoALib |             | Normal   | Remove cruft from test files  |                    | 08 May 2015 11:37 | Tidying         | 0      |
| 690 | CoCoALib |             | Normal   | Fault tolerant rational reconstruction: implement simultaneous version        |                    | 23 Apr 2015 19:12 | New Function    | 0      |
| 688 | CoCoALib |             | Normal   | PolyAlgebraHom (PolyRingHom) evaluate multivariate polynomials                |                    | 22 Apr 2015 14:38 | Improving       | 10     |
| 686 | CoCoALib |             | Normal   | myAddMul in poly rings  | Anna Maria Bigatti | 20 Apr 2015 13:22 | Tidying         | 20     |

| #   | Project  | Parent task | Priority | Subject  | Assignee           | Updated           | Category      | % Done |
|-----|----------|-------------|----------|--|--------------------|-------------------|---------------|--------|
| 685 | CoCoALib |             | High     | Use DivMask inside QBGenerator   |                    | 02 Feb 2016 14:16 | Tidying       | 0      |
| 682 | CoCoALib |             | Low      | PPMonoid: add fn to check for overflow in products                               |                    | 14 Apr 2015 11:23 | Safety        | 0      |
| 681 | CoCoALib |             | Low      | MemPool: make it easier to get just stats  |                    | 13 Apr 2015 23:25 | Various       | 0      |
| 680 | CoCoALib |             | Normal   | DistrMPolyClean does not use MemPool for summands?                               | John Abbott        | 07 Mar 2023 20:49 | Tidying       | 70     |
| 678 | CoCoALib |             | Normal   | Accumulator (like a geobucket)   |                    | 17 Nov 2016 19:03 | New Function  | 20     |
| 676 | CoCoALib |             | Normal   | Credits to CoCoALib contributors   | Anna Maria Bigatti | 28 Apr 2017 11:06 | Documentation | 10     |
| 675 | CoCoALib |             | Normal   | Matrix determinant over multivariate poly ring                                   |                    | 22 May 2015 13:45 | Tidying       | 10     |
| 667 | CoCoALib |             | Normal   | factor: multivariate + finite characteristic                                     |                    | 04 Mar 2015 20:08 | New Function  | 0      |
| 665 | CoCoALib |             | Normal   | Integrate Janet/Pommaret basis code  | John Abbott        | 12 Jun 2018 18:36 | New Function  | 10     |
| 664 | CoCoALib |             | Urgent   | Impl small non-prime finite fields (using logs)                                  | John Abbott        | 14 Mar 2023 19:49 | New Function  | 80     |
| 661 | CoCoALib |             | Normal   | Laurent polynomials  |                    | 23 Jan 2015 13:50 | New Function  | 0      |
| 651 | CoCoALib |             | Normal   | Optimized algorithms for implicitization (slicing algorithm, elim, subalgebra..) |                    | 12 Feb 2015 10:33 | New Function  | 10     |
| 647 | CoCoALib |             | Normal   | Unique copies of free modules?   |                    | 10 Nov 2014 16:55 | Safety        | 0      |
| 644 | CoCoALib |             | Normal   | Buchberger-Moeller: add option to stop as soon as 1 poly has been found          | John Abbott        | 06 Nov 2017 13:58 | New Function  | 0      |
| 640 | CoCoALib |             | Normal   | What is test-Dynamic1.C  |                    | 29 Oct 2014 11:30 | Tidying       | 0      |
| 639 | CoCoALib |             | Low      | Shadow CoCoA namespace to help guarantee portability (without ambiguity)         |                    | 28 Oct 2014 15:34 | Safety        | 0      |
| 628 | CoCoALib |             | Normal   | Complex twin-floats  |                    | 22 Sep 2014 18:16 | New Function  | 0      |
| 627 | CoCoALib |             | Normal   | Gaussian integer and rationals ZZi, QQi  |                    | 23 Sep 2014 16:30 | New Function  | 0      |
| 624 | CoCoALib |             | Normal   | Wikipedia  | Anna Maria Bigatti | 06 Nov 2017 13:40 | Documentation | 0      |
| 620 | CoCoALib |             | Normal   | Redesign CRTMill   | John Abbott        | 21 Mar 2016 14:30 | New Function  | 20     |
| 617 | CoCoALib |             | Normal   | configure: check all libraries for compatibility                                 |                    | 09 Sep 2014 12:21 | Portability   | 0      |
| 601 | CoCoALib |             | Normal   | LongRange: in which file should it be declared/defined?                          |                    | 08 Mar 2023 20:45 | Tidying       | 10     |
| 598 | CoCoALib |             | Normal   | Syzygy for modules: non-homogeneous module                                       | Anna Maria Bigatti | 27 Mar 2024 17:31 | Improving     | 40     |
| 591 | CoCoALib |             | Low      | Problem with template instantiation and order of include directives              |                    | 09 Feb 2024 10:18 | Portability   | 50     |
| 589 | CoCoALib |             | Normal   | Implement gin (generic initial ideal) in cocoalib                                | Anna Maria Bigatti | 15 Jul 2014 18:17 | New Function  | 0      |
| 583 | CoCoALib |             | Normal   | New function for printing with extra information                                 |                    | 07 Jul 2014 11:48 | New Function  | 0      |
| 582 | CoCoALib |             | Normal   | Error codes: use same code for "not poly ring" and "not elem poly ring"          |                    | 26 Mar 2024 14:36 | Tidying       | 30     |
| 575 | CoCoALib |             | Normal   | Investigate using cmake for configuration  | John Abbott        | 13 Mar 2024 21:19 | Portability   | 10     |

| #   | Project  | Parent task | Priority | Subject   | Assignee           | Updated           | Category        | % Done |
|-----|----------|-------------|----------|---|--------------------|-------------------|-----------------|--------|
| 572 | CoCoALib |             | Normal   | Split SparsePolyRing.H into two files? Problem with circular includes.        |                    | 17 May 2018 16:36 | Tidying         | 0      |
| 570 | CoCoALib |             | Normal   | Allow use of RingElem instead of ring in some functions (e.g. PPM, CoeffRing) |                    | 16 Jul 2014 14:43 | New Function    | 0      |
| 569 | CoCoALib |             | Normal   | Documentation for ReductionCog  |                    | 11 Jun 2014 16:04 | Documentation   | 0      |
| 565 | CoCoALib |             | Normal   | FloatApprox for TwinFloat values?   | John Abbott        | 19 Jul 2016 22:44 | New Function    | 20     |
| 564 | CoCoALib |             | Normal   | Temporary file for experimentation  |                    | 16 Jul 2014 14:38 | Various         | 0      |
| 562 | CoCoALib |             | Normal   | Subrings  |                    | 29 Sep 2020 13:19 | Safety          | 0      |
| 551 | CoCoALib |             | Normal   | Reconsider overloaded virtual mem fns   |                    | 09 Jul 2014 18:00 | Safety          | 0      |
| 550 | CoCoALib |             | Normal   | add myResolution member field to ideal and (sub)module                        |                    | 13 May 2015 09:57 | Data Structures | 0      |
| 547 | CoCoALib |             | Normal   | elim using RingTwinFloat triggers error "SERIOUS"                             |                    | 15 Jun 2016 14:35 | Various         | 0      |
| 539 | CoCoALib |             | Low      | Functions to clean up a factorization   |                    | 22 Jan 2024 20:28 | New Function    | 0      |
| 537 | CoCoALib |             | Low      | FloatStr uses too much memory   |                    | 16 Apr 2014 12:01 | Tidying         | 0      |
| 516 | CoCoALib |             | Normal   | Make squarefreefactor work in multiple polynomial extns                       |                    | 10 Jul 2014 14:21 | Tidying         | 0      |
| 515 | CoCoALib |             | Normal   | Fn to "flatten" multiple polynomial extns                                     |                    | 10 Jul 2014 14:22 | New Function    | 0      |
| 513 | CoCoALib |             | High     | Quick/correct flag for bool3 fns  |                    | 10 Jul 2014 16:30 | New Function    | 10     |
| 505 | CoCoALib |             | Normal   | Documentation: write doc for RingDenseUPolyClean                              | Anna Maria Bigatti | 21 Sep 2016 17:15 | Documentation   | 0      |
| 497 | CoCoALib |             | Normal   | Clang: automatic bug finding  |                    | 04 Apr 2014 17:20 | Safety          | 0      |
| 482 | CoCoALib |             | Normal   | Unique copies of rings -- smart ctor  |                    | 20 Oct 2015 14:33 | Safety          | 10     |
| 459 | CoCoALib |             | Low      | LinearSimplify: port to CoCoALib  |                    | 20 May 2014 09:47 | New Function    | 0      |
| 455 | CoCoALib |             | Normal   | Which sets of generators in an ideal?   |                    | 14 Jul 2014 15:17 | Various         | 0      |
| 442 | CoCoALib |             | Normal   | Eigenvectors  |                    | 09 Jul 2014 18:05 | New Function    | 0      |
| 440 | CoCoALib |             | High     | Port RealRoots to C++   | John Abbott        | 19 Oct 2016 10:26 | New Function    | 0      |
| 438 | CoCoALib |             | Normal   | Polynomial multiplication (product of RingElem)                               |                    | 10 Jul 2014 16:28 | Various         | 10     |
| 437 | CoCoALib |             | Normal   | MemPool: order free blocks?   |                    | 13 Apr 2015 23:31 | Tidying         | 10     |
| 436 | CoCoALib |             | Normal   | Improve UPoly eval at BigRat for binary rational                              |                    | 01 Aug 2014 08:59 | New Function    | 0      |
| 432 | CoCoALib |             | Normal   | Semantics of IsPrintedWithMinus   |                    | 14 Jul 2014 18:13 | Various         | 10     |
| 427 | CoCoALib |             | Normal   | Error names and error messages (current design)                               |                    | 11 May 2017 10:57 | Data Structures | 10     |
| 420 | CoCoALib |             | Normal   | Allow user to give a name to a ring   |                    | 13 May 2015 09:55 | Improving       | 0      |
| 409 | CoCoALib |             | High     | Minimal syzygies (optimized implementation)                                   | Anna Maria Bigatti | 31 Jul 2014 12:36 | New Function    | 0      |
| 401 | CoCoALib |             | Normal   | NewFreeModule of dimension 0  |                    | 31 Jul 2014 14:13 | Various         | 0      |
| 400 | CoCoALib |             | Normal   | add myJMill member field to ideal   |                    | 15 Sep 2014 12:04 | New Function    | 0      |

| #   | Project  | Parent task | Priority | Subject  | Assignee           | Updated           | Category        | % Done |
|-----|----------|-------------|----------|--|--------------------|-------------------|-----------------|--------|
| 399 | CoCoALib |             | High     | add myHilbertSeries member field to ideal and (sub)module          | Anna Maria Bigatti | 30 Jul 2014 17:04 | New Function    | 0      |
| 396 | CoCoALib |             | Normal   | PPMonoidElemAlias: redesign PPMonoidElem the same way as RingElem? | John Abbott        | 13 May 2015 09:57 | Data Structures | 0      |
| 387 | CoCoALib |             | High     | implement algorithm(s) for resolutions                             | Anna Maria Bigatti | 30 Jul 2014 17:04 | New Function    | 0      |
| 386 | CoCoALib |             | High     | add resolution data type   | Anna Maria Bigatti | 11 Jun 2015 14:58 | New Function    | 10     |
| 385 | CoCoALib |             | Urgent   | Design new errors using inheritance                                | John Abbott        | 09 Feb 2024 10:25 | Tidying         | 40     |
| 383 | CoCoALib |             | Normal   | Resolution/morse: integrate Mario Albert's code into CoCoALib      | John Abbott        | 31 Jul 2014 14:57 | New Function    | 60     |
| 360 | CoCoALib |             | Normal   | CoCoAServer: what future, what issues?                             |                    | 28 Apr 2017 11:19 | Various         | 0      |
| 353 | CoCoALib |             | Normal   | Missing documentation and tests for myRecvTwinFloat                | John Abbott        | 14 Jul 2014 14:40 | Documentation   | 0      |
| 337 | CoCoALib |             | Normal   | Module homs  |                    | 31 Jul 2014 12:40 | New Function    | 0      |
| 329 | CoCoALib |             | Normal   | Why is DMPI slower than DMPClean?                                  |                    | 13 May 2015 09:54 | Improving       | 0      |
| 326 | CoCoALib |             | Normal   | C++ nasty surprises  |                    | 07 Apr 2014 18:13 | Portability     | 10     |
| 316 | CoCoALib |             | Normal   | submodule constructor different from ideal                         | Anna Maria Bigatti | 10 Jul 2014 16:21 | Tidying         | 0      |
| 315 | CoCoALib |             | Normal   | Add doc for ApproxPts2   |                    | 10 Jul 2014 16:23 | Documentation   | 0      |
| 313 | CoCoALib |             | High     | Elim(vector<long>) as PPOrderingCtor                               | Anna Maria Bigatti | 22 Mar 2024 18:17 | New Function    | 30     |
| 308 | CoCoALib |             | High     | Error: ERR::NotNonZero instead of ERR::ZeroRingElem?               |                    | 27 Mar 2024 17:37 | Renaming        | 40     |
| 305 | CoCoALib |             | Normal   | FreeModule: unique copy?   |                    | 10 Dec 2023 20:43 | Tidying         | 10     |
| 302 | CoCoALib |             | Normal   | Compilation on M\$Windows: Visual Studio                           |                    | 22 Mar 2024 23:13 | Portability     | 60     |
| 297 | CoCoALib |             | Normal   | Modules design: brainstorming                                      |                    | 31 Jul 2014 14:55 | New Function    | 30     |
| 289 | CoCoALib |             | Normal   | PrimeField -- new fn?  |                    | 01 Aug 2014 08:59 | New Function    | 0      |
| 282 | CoCoALib |             | Normal   | Global setting: to use IsProbPrime in place of IsPrime             |                    | 01 Aug 2014 08:59 |                 | 0      |
| 281 | CoCoALib |             | Normal   | Store unique copy of FF(p) in GlobalManager                        |                    | 04 Apr 2014 17:10 |                 | 0      |
| 277 | CoCoALib |             | Normal   | Eliminate class RefPPMonoidElem?                                   |                    | 01 Aug 2014 08:59 |                 | 0      |
| 272 | CoCoALib |             | Normal   | Forward declarations   |                    | 07 Apr 2014 18:14 | Tidying         | 0      |
| 263 | CoCoALib |             | High     | Move the various <matrix>::mySetEntry procedures into MatrixBase   |                    | 01 Aug 2014 16:29 | Tidying         | 0      |
| 262 | CoCoALib |             | Normal   | Play with GIT  |                    | 08 Mar 2023 19:54 | Various         | 0      |
| 258 | CoCoALib |             | Normal   | Multivariate lifting   |                    | 01 Aug 2014 08:59 |                 | 0      |
| 257 | CoCoALib |             | Normal   | Transcribe C4 code for GCD in QQ[x]                                |                    | 01 Aug 2014 08:59 |                 | 0      |
| 246 | CoCoALib |             | Normal   | Approx QIR   |                    | 04 Apr 2014 17:16 | New Function    | 0      |
| 232 | CoCoALib |             | Normal   | No test for QBGenerator  |                    | 15 Apr 2015 20:15 | Various         | 0      |

| #   | Project  | Parent task  | Priority | Subject   | Assignee           | Updated           | Category        | % Done |
|-----|----------|--|----------|---|--------------------|-------------------|-----------------|--------|
| 231 | CoCoALib |  | Normal   | Documentation for QBGenerator needs to be improved.           |                    | 09 Jul 2014 18:06 | Documentation   | 0      |
| 229 | CoCoALib |  | Normal   | Generator for random ring elements                            |                    | 01 Aug 2014 08:59 | New Function    | 0      |
| 227 | CoCoALib |  | Normal   | HilbertBasis from Normaliz: full-lattice or not?              |                    | 31 Jul 2014 12:39 | New Function    | 0      |
| 222 | CoCoALib |  | Normal   | Printing polynomials - spaces between terms                   |                    | 14 Mar 2023 21:27 | Various         | 30     |
| 206 | CoCoALib |  | Urgent   | Matrix equation solving: LinKer                               |                    | 22 Mar 2024 09:42 | New Function    | 30     |
| 205 | CoCoALib |  | Normal   | Example for change of coordinates with coeffs in a matrix     | Anna Maria Bigatti | 14 Jul 2014 14:39 | Documentation   | 0      |
| 196 | CoCoALib |  | Normal   | PPWithMask needs checking                                     | Anna Maria Bigatti | 04 Apr 2014 17:50 | Documentation   | 0      |
| 174 | CoCoALib |  | Normal   | IsStdGraded: add for PPOrdering, PPMonoid, (Sparse)PolyRing.. |                    | 01 Aug 2014 08:59 | New Function    | 0      |
| 161 | CoCoALib |  | Normal   | Convert old "task table" into redmine                         |                    | 07 Apr 2014 14:35 | Documentation   | 0      |
| 154 | CoCoALib |  | Normal   | GCD normalization (e.g. monic)                                |                    | 24 Nov 2016 13:56 | Tidying         | 20     |
| 151 | CoCoALib |  | Normal   | Iterated CanonicalHom   |                    | 13 May 2015 09:58 | New Function    | 0      |
| 150 | CoCoALib |  | Normal   | RingOf rather than owner? (and than AmbientRing, ...)         |                    | 30 Jul 2014 17:59 | Renaming        | 10     |
| 149 | CoCoALib |  | Normal   | Makefile dependencies   |                    | 01 Aug 2014 08:59 | Makefile        | 0      |
| 146 | CoCoALib |  | Normal   | Buchberger-Moeller: input conversions                         |                    | 10 Jul 2014 14:17 | New Function    | 0      |
| 143 | CoCoALib |  | Urgent   | Buchberger-Moeller (parent task)                              | John Abbott        | 10 Jul 2014 14:16 | New Function    | 38     |
| 145 | CoCoALib | Feature #143:<br>Buchberger-Moeller<br>(parent task) | Urgent   | Buchberger-Moeller: fast modular impl                         | John Abbott        | 10 Jul 2014 14:17 | New Function    | 0      |
| 147 | CoCoALib | Feature #143:<br>Buchberger-Moeller<br>(parent task) | Urgent   | Buchberger-Moeller: impl via modular reduction                | John Abbott        | 10 Jul 2014 14:18 | New Function    | 20     |
| 142 | CoCoALib |  | Normal   | Improve threadsafety  |                    | 21 Mar 2024 20:29 | Safety          | 50     |
| 134 | CoCoALib |  | Normal   | Convenience ring ctors and homs                               |                    | 11 Jul 2014 12:06 | New Function    | 0      |
| 130 | CoCoALib |  | Normal   | Design problem in ideals                                      |                    | 13 May 2015 09:56 | Data Structures | 0      |
| 129 | CoCoALib |  | Normal   | Better GCD  |                    | 09 Jul 2014 18:08 | New Function    | 0      |
| 127 | CoCoALib |  | Normal   | Convert DUPFF code to C++                                     | John Abbott        | 28 Sep 2022 15:04 | New Function    | 50     |
| 126 | CoCoALib |  | Normal   | New datastructures directory                                  |                    | 13 May 2015 09:56 | Data Structures | 0      |
| 125 | CoCoALib |  | Normal   | Matrix equation solving; linear system solving                | John Abbott        | 18 Mar 2024 10:00 | New Function    | 50     |
| 123 | CoCoALib |  | Normal   | IdealOfPoints with generic coeffs                             |                    | 09 Jul 2014 18:15 | New Function    | 0      |
| 120 | CoCoALib |  | Normal   | LT over QQ: surprisingly slow                                 |                    | 10 Jul 2014 16:26 | Various         | 0      |
| 114 | CoCoALib |  | Normal   | Ideals of polynomials   |                    | 10 Jul 2014 14:26 | Tidying         | 10     |
| 113 | CoCoALib |  | Normal   | Introduce PartialHom  | John Abbott        | 09 Jul 2014 18:04 | New Function    | 10     |
| 112 | CoCoALib |  | Normal   | automatic creation of all function signatures                 |                    | 07 Apr 2014 14:34 | Documentation   | 0      |

| #  | Project  | Parent task | Priority | Subject  | Assignee           | Updated           | Category      | % Done |
|----|----------|-------------|----------|--|--------------------|-------------------|---------------|--------|
| 92 | CoCoALib |             | Normal   | Error Codes  |                    | 19 Apr 2017 08:31 | Various       | 0      |
| 87 | CoCoALib |             | Normal   | Cleanup header for ring classes (so that they are e-diff-able) | Anna Maria Bigatti | 10 Jul 2014 16:26 | Tidying       | 10     |
| 76 | CoCoALib |             | Low      | keywords in documentation                                      |                    | 04 Apr 2014 17:51 | Documentation | 0      |
| 74 | CoCoALib |             | Normal   | printing polynomials   |                    | 14 Jul 2014 11:07 | Various       | 10     |
| 59 | CoCoALib |             | Low      | List of all functions in CoCoALib                              |                    | 08 Mar 2023 19:44 | Documentation | 10     |
| 26 | CoCoALib |             | High     | Redmine Administration   | Anna Maria Bigatti | 23 Feb 2024 10:59 | Documentation | 80     |
| 6  | CoCoALib |             | High     | Sort out RingElem, RefRingElem, ConstRefRingElem mess          | John Abbott        | 01 Aug 2014 08:59 |               | 0      |