- Return to Algorithm

MultInvField for GAP 4 ver.2018.11.03

Authors: Akinari Hoshi, Aiichi Yamasaki.
Needs: GAP,version >=4.4.12; GAP package carat, version >=2.1b1; GAP package crystcat, version >=4.1.6; GAP package SONATA, version >=2.4
Current version: MultInvField-2018.11.03.zip
(MultInvFieldToNoetherProblem.gap was added to ver.2017.06.18)
Contact: Akinari Hoshi, Aiichi Yamasaki.
URL:
http://mathweb.sc.niigata-u.ac.jp/~hoshi/Algorithm/MultInvField/index.html
https://www.math.kyoto-u.ac.jp/~yamasaki/Algorithm/MultInvField/index.html

Description

This code provides algorithms for multiplicative invariant fields.

Installation

1. (for Windows) Install VMware (in suitable Language).
   (for Mac OSX) Install VMware Fusion (in suitable Language).
2. Install Ubuntu (Japanese ver.) on VMware.
   Over 2GB memory on Ubuntu is recommended.
3. Download GAP and unpack it on Ubuntu to ~/ (/home/*username*).
   Go to ~/gap4r8 (Type "cd ~/gap4r8") and type "./configure".
   If "Please install m4 or build without GMP." appeared, type "sudo apt install m4" then type "./configure" again.
   Type "make".
   Go to ~/gap4r8/pkg (Type "cd ~/gap4r8/pkg") and type "../bin/BuildPackages.sh".
4. Download MultInvField-2018.11.03.zip and unpack it to ~/ (/home/*username*).
   Go to ~/MultInvField (Type "cd ~/MultInvField") and type "chmod +x BuildCarat.sh".
   Go to ~/gap4r8/pkg (Type "cd ~/gap4r8/pkg") and type "~/MultInvField/BuildCarat.sh".
   Go to ~/MultInvField (Type "cd ~/MultInvField") and type "~/gap4r8/bin/gap.sh".
   If you can see "gap> ", the installation was successful.
   Then type "Read("MultInvField.gap");" on GAP.

Documentation

BuildCarat [.html, .pdf]
caratnumber [.html, .pdf]
cohomology [.html, .pdf]
crystcat [.html, .pdf]
crystdat [.html, .pdf]
FlabbyResolution [.html, .pdf]
KS [.html, .pdf]
README [.html, .pdf]
res [.html, .pdf]

Content

```
MultInvField-2018.11.03.zip-+-MultInvField-+-AllSubdirectProducts.gap
                                           +-BuildCarat.sh
                                           +-BuildCarat.pdf
                                           +-BuildCarat.old.2017.06.18.sh
                                           +-carat2crystcat.txt
                                           +-caratchpol.txt
                                           +-caratnumber.gap
                                           +-caratnumber.pdf
                                           +-cohomology.gap
                                           +-cohomology.pdf
                                           +-cryst1.txt
                                           +-cryst2.txt
                                           +-cryst3.txt
                                           +-cryst4.txt
                                           +-cryst5.txt
                                           +-cryst6.txt
                                           +-crystcat.gap
                                           +-crystcat.pdf
                                           +-crystdat.zip (9 files included)
                                           +-crystdat.pdf
                                           +-FlabbyResolution.gap
                                           +-FlabbyResolution.pdf
                                           +-Glattice.dat
                                           +-Glattice5.dat
                                           +-Glattice6.dat
                                           +-H1cryst.txt
                                           +-KS.gap
                                           +-KS.pdf
                                           +-MultInvField.gap
                                           +-MultInvFieldToNoetherProblem.gap
                                           +-NonInv.dat
                                           +-NonInv5.dat
                                           +-NSaltman.dat
                                           +-README.txt
                                           +-README.pdf
                                           +-res.gap
                                           +-res.pdf
                                           +-MultInvField-2018.11.03.pdf
```

References

[HY17] Akinari Hoshi and Aiichi Yamasaki, Rationality problem for algebraic tori, Mem. Amer. Math. Soc. **248** (2017) no. 1176, v+215 pp. AMS Preprint version: arXiv:1210.4525.

[HKY23] Akinari Hoshi, Ming-chang Kang and Aiichi Yamasaki, Multiplicative Invariant Fields of Dimension ≤ 6, Mem. Amer. Math. Soc. **283** (2023) no. 1403, vi+137 pp. AMS Preprint version: arXiv:1609.04142.

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