GC_ReadmeN5 for the grobcov.lib library
Release N5

After downloading **grobcov** you will obtain the
folder grobcovN5.

- Folder grobcovN5 contents:

  1) grobcov.lib (version N5 of the library),

  2) two *.sg files to be read in Singular that use grobcov.lib:
     GC_HELPS.sg
     GC_EXAMPLES.sg,

  3) two *.sgw files that are the result of reading the
     previous *.sg files in Singular.
     GC_HELPS.sgw
     GC_EXAMPLES.sgw

Copy these 5 files into your Singular directory.

You do not need to execute the *.sg files
as the result can be seen in the corresponding *.sgw files.
Nevertheless, you can execute them by reading them
in Singular, to verify that your installation is correct.

These files are given to facilitate the use of the Singular
grobcov.lib library, programmed by Antonio Montes and containing the
Montes-Wibmer algorithm for computing the Gröbner cover a of parametric ideal.

If you want to obtain the latest actualization of the library grobcov.lib, you can
download it from the web:
https://mat.upc.edu/en/people/antonio.montes/
containing all the files described here. The basic routines are:

grobcov, cgsdr, extend,
pdivi, pnormalf, setglobalrings, Crep, Prep, PtoCrep,
ConsLevels,
locus, lodusdg, locusto, envelop, envelopdg
ADGT, intersectpar

The new version N5 includes procedures for computing:
- Comprehensive Groebner System (CGS) (Kapur-Sun-Wang),
- canonical Groebner Cover of a parametric ideal (grobcov) (Montes-Wibmer),
- canonical union and representation of constructible sets (Brunat-Montes)
- loci computation and taxonomy (Abanades, Botana, Montes, Recio) and applications
to dynamic geometry,
- envelop computation and taxonomy (Montes et al.) and applications to dynamic
geometry.
- Automatic Deduction of Gewometric Theorems (ADGT)

The different algorithms are described in:

- Comprehensive Groebner System (GCS) (KSW algorithm):

D. Kapur, Y. Sun, and D.K. Wang.
"A New Algorithm for Computing Comprehensive Groebner Systems".
Proceedings of ISSAC'2010, ACM Press, (2010), 29-36.

- Groebner Cover of a parametric ideal :

A. Montes, M. Wibmer.
"Groebner Bases for Polynomial Systems with Parameters."
Journal of Symbolic Computation 45 (2010) 1391 - 1425.
- Loci computation:
Abanades, Botana, Montes, Recio:
"An Algebraic Taxonomy for Locus Computation in Dynamic Geometry".
Computer-Aided Design 56 (2014) 22-33.

- Canonical representation of consructible sets:
A. Montes, J.M. Brunat,
"Computing the vanonical representations of constructible sets".
J.M. Brunat, A. Montes
submitted to
Mathematics in Computer Science
- Envelop computation:
Abanades, Botana, Montes, Recio:
"Envelops in Dynamic Geometry using the Groebner cover". (to be published)
- ADGT:
A. Montes,
"Automatic Deduction of Geometric Theorems using the Gröebner Cover",
Proceedings of EACA 2018
The book "Gröbner Cover" that will be next published in the Springer series
"Algorithms and Computation in Mathematics" describes all the commands of the
library.