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".

- Groebner Cover of a parametric ideal:
  A. Montes, M. Wibmer.
  "Groebner Bases for Polynomial Systems with Parameters."

- Loci computation:
  Abanades, Botana, Montes, Recio:
  "An Algebraic Taxonomy for Locus Computation in Dynamic Geometry".

- Canonical representation of constructible sets:
  A. Montes, J.M. Brunat,
  "Computing the vanonical representations of constructible sets".
  J.M. Brunat, A. Montes
  submitted to
  Mathematics in Computer Science

- Envelope 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 Gröbner 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.